THE

SCOTCH EPIDEMIC FEVER

OF 1843-44:

ITS HISTORY, PATHOLOGY, AND TREATMENT,

IN WHICH IT IS MAINTAINED THAT, THE DISEASE ESSENTIALLY DIFFERED FROM THE ORDINARY FORMS OF CONTINUED FEVER, WITNESSED IN THIS COUNTRY.

BY

JOHN RICHARD WARDELL, M.D. EDIN.

LATE PRESIDENT OF THE ROYAL PHYSICAL AND HUNTERIAN MEDICAL SOCIETIES,
MEMBER EXTRAORDINARY OF THE ROYAL MEDICAL SOCIETY;
FORMERLY HOUSE PHYSICIAN TO THE ROYAL INFIRMARY, ASSISTANT PATHOLOGIST TO THE HOSPITALS, EDINBURGH,
ETC. ETC.

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PREFACE.

When the former of these papers, which the "Medical Gazette" has done the writer the honour of publishing, were sent to the press, not the least intention was entertained of their ever appearing before the public in a separate form; but as Fever has recently been so exceedingly prevalent, and as much special attention by many eminent authorities has been devoted to the subject, with a view, if possible, that a more definite knowledge should be gained of its essential nature,—and as the epidemic which has been described indisputably presented many unusual characteristics, so much so, indeed, as to warrant the appellation of *nova pestis*,—it was deemed that this pamphlet might not be wholly unacceptable to those professional readers who are interested in the study of febrile diseases.

Some apology is due for the form in which this publication is sent forth, as also for certain typographical errors that may be met with, dependent upon the author being at a considerable distance from the press at the time of the papers being printed, which it is trusted the indulgence of the reader will excuse.

London, *January* 1, 1848.

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ERRATA.

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1 ... 1 *for* Daison, *read* Darwin.

6 ... 1 *for* 1·100, *read* 1·200.

7 ... 1 *for* re-built, *read* unbuilt.

22 ... 2 *for* 30 to 40, *read* 20 to 40.

30 ... 2 Sectional head, No. XI, *see* page 74.

38 ... 2 *for* Hursnan, *read* Huxham.

98 ... 2 (foot-note) *for* No. IX. *read* No. VIII.

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By JOHN RICHARD WARDELL, M.D. Edin.

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From the London Medical Gazette.

THE SCOTCH EPIDEMIC FEVER.

Preliminary Remarks.—Febrile diseases have ever been regarded amongst the most formidable affections with which mankind are afflicted. From the remotest periods of antiquity, the writers of every age have noticed their ravages, and with the medical philosopher they claim a most important share of attention—so various are the doctrines respecting many essential particulars connected with idiopathic fever. From the time of Hippocrates to our own, physicians have ever and anon put forth some new theories and opinions, which promised to elucidate its study and render its treatment more certain and successful. Hippocrates imagined fever to originate in a salutary effort on the part of nature to unload the body of some noxious matter which it had imbibed. Stahl, also, though with some modification, espoused the same theory. Boerhaave entertained a notion that the cause was attributable to a morbid tentor of the blood. Hoffman believed that it consisted in a diminished energy of the nervous system. Cullen, who was inclined to the views of the latter, contended for the proximate cause being in a spasmodic contraction of the extreme vessels. Daison supposed that the acquired poisons first produced a general quiescence in the arterial system, and that the subsequent heat was an exertion of the sensorial power consequent upon accumulated irritability; and Dr. Wilson Philip says that the cause of fever is owing to a debility of the capillaries, consequently an inordinate distension of them. Each of these theories, however, has been objected to, and cogent reasons asserted in support of opposed opinions; yet amid all the confliction of arguments from time to time advanced, no positive demonstration has yet been given, to settle a subject so long under disputation and involved in so much mystery. Broussais and other French pathologists have assigned its seat to the mucous membrane of the alimentary canal; and contest that the various phenomena observed, are but so many symptoms incident upon such affection. The followers of that doctrine, however, are undoubtedly erroneous in their views, and mistake for cause that which in reality is merely effect. The fevers of almost every country, from causes it may be that are inscrutable, as well as those which are acknowledged, present varieties in their action and general features; in one part they may have a disposition to take on the inflammatory type, in another to run into the adynamic state, and so on. From whatever common cause fever may be produced, it is certain that it undergoes very great modifications from external circumstances and personal peculiarities, in every locality some difference being discernible, as to its nature and mode of affection. In cold climates typhus is said to prevail in the greatest degree, and in tropical regions intermittents and remittents. Certain districts, even in the same country, variously favour their propagation, while the moral and social as well as the physical conditions of the people, exert an undoubted influence. When there occurs a combination of certain states accounted as highly favourable to the generation of fever, as the seasons, the weather, miasmatous poisons, deficiency of food, moral calamities, &c., and a number of people simultaneously become affected, it is then said to be epidemic, and if the mortality be very great it is called a pestilence. Visitations of this description have ever been regarded with fearful apprehensions, their results having been occasionally of the most calamitous nature, whole countries and communities being affected, and producing the most appalling scenes of misery and distress; the histories of nations present too many corroborations of the remark, and afford the most melancholy records which such ravages have produced.

It seldom happens that two epidemics, even in the same district and amid the same set of people, present an exactly similar train of symptoms; at one time certain organs and tissues become affected, which at another have a comparative immunity. The epidemic raging in Edinburgh during the years 1817-20, which was described by Dr. Welsh,* manifested a great

* Welsh on Bloodletting in Fever.

tendency to take on inflammatory action; hence the almost invariable practice of blood-letting, which, according to that author, was an indispensable mode of treatment. In more recent febrile attacks noticed in that city, the mortality has been much higher, and the fever assumed more of the adynamic type. The mortality of the epidemic 1817-20, was 1 in 25 or 30; in that of 1826-7, 1 in 10.33; in 1837, 1 in 10; and in that of 1838, 1 in 6.27. In the fever about to be treated of, I shall endeavour to prove that it presented peculiarities rendering it wholly unlike any form of continued fever hitherto known. That it was not typhus nor synochus, the most usual kinds of fever observed in Edinburgh and other large towns in Scotland, future statements will evidently attest. Some of its phenomena favoured the supposition that it presented certain intermittent properties, as shown by the frequent biliary derangement and the almost universality of relapses. (Tables 5, 6, 8, 9, and 10). Its resolution was nearly always by a well-marked diaphoresis, often copious, and coming on generally about the seventh but never later than the ninth day after its accession. (Tables 5, 6, and 9). The mortality was by no means high, the sequels were of an unusual kind; great general debility was present; a peculiar eruption resembling small ecchymoses or flea-bites often were noticed, with other anomalies rendering it of so novel a character as to almost warrant the appellation of *Nova Pestis*. Sydenham, who, as a high authority and philosophic observer regarding epidemic diseases, is perhaps most worthy of respect since the days of Hippocrates, remarked that these diseases were generally *most severe and fatal at the onset, that the treatment necessary at the beginning was quite inapplicable at the decline of the attack, and that, in the course of time, they as it were wore themselves out.* In the epidemic of 1843-4, the foregoing statements by no means hold good, as it will be shown that the essential characters of the distemper were very nearly the same at its close as at the commencement. Again, these visitations will sometimes gradually change their type; for instance, remittents becoming of the continued form, intermittents turning into remittents, and so on; the disorder in question, as insisted upon, maintained throughout its duration a uniform character. Thucydides, in his time, observed that during the existence of a pestilence other kinds of epidemic diseases were scarcely ever seen; Table 4 in a great measure proves this assertion, for out of 330 cases of fever at one time in the Edinburgh fever hospitals, only 10 of that number, being 1 in 33 of the aggregate, were of the genuine typhus, so that it appears two epidemics are seldom co-existent, and "while the tyrant disease is prevailing it usurps complete dominion, and suffers no other disease to appear of an epidemic character."

Those variations which epidemics present, have been said to be produced by important dissimilarities in those external conditions and other states, accounted as favourable to their propagation; nor is it more improbable to suppose that poisons concerned in generating fevers, by being altered in themselves, from extrinsic influences or otherwise, should be productive of varied effects upon the body, than that different medicines should produce certain actions upon certain parts—as mercurials upon the liver, narcoties upon the nervous system, some of the resinous extracts upon the urinary passages, &c.; but why those contracted poisons, or deleterious states affecting the system, should be followed by special results in their operations, and that medicines should manifest a partiality for particular localities and organs, in the body is quite inexplicable, and like many other considerations which have received the attention of philosophic inquiry, remains unknown.

To investigate the causes most predominant in the generation of a distemper like the one to be described, is of the greatest importance, in order to guard against similar occurrences in the future. There might be, it is true, essentials entering into the causation that it would defy human power to obviate, yet it is equally plausible to presume that circumstances existed, among the class of people with whom it was in a great measure restricted, that were highly favourable to its extension, and that might in some manner have been averted. Some time previous to its first appearance, numbers of the operatives and the lower

orders had been for months out of employ, and with these classes the greatest misery prevailed. The following *Table* shews that out of 150 patients, only 36 of that number, at the time they were taken ill, were in full employment; 46 were in partial work; and 68 totally out of employ; so that about three-fourths were not in the way of earning a sufficient livelihood.

TABLE I.*

	Males.	Females.	Total.
Born in England . . .	7	1	8
Born in Scotland . . .	19	48	67
Born in Ireland . . .	17	8	25
Natives of Edinburgh . .	15	35	50
Resident 14 years in Edinburgh	12	18	30
Resident 3 years in Edinburgh .	8	10	18
Working in Edinburgh . .	33	35	73
In full work	11	25	36
In partial work . . .	17	29	46
Out of work	29	39	68

Future statements as to this particular will I trust convince unprejudiced minds that the fever was very importantly connected with destitution, and, consequently, in some degree capable of prevention. There is perhaps no attack of sickness remembered that produced so much positive misery and distress amongst the lower orders in many of the large towns in Scotland as the epidemic fever of 1843-4. From the returns of the medical practitioners in Glasgow, it was estimated, previous to its entire termination, that no less than 33,000 of the inhabitants had taken the distemper; and Professor Alison informed me that, from his own calculations, between 8,000 and 9,000 had laboured under it in Edinburgh. In Paisley, Dundee, Aberdeen, Greenock, &c., the numbers were correspondingly great. In each of those places, as in the metropolis, it was almost wholly confined to the poor, being quite in accordance with the statements given of epidemic and pestilential visitations, by several authors who at various times have recorded these attacks. The ancient writers not unfrequently associate poverty and disease with one another, and consider the former as a common cause of the latter. The third visitation of the "sweating sickness," which occurred in the year 1517, during the reign of Henry VII., was accounted for in some measure by the *poverty of the people*, it being stated that "among the lower classes the deaths were innumerable.* Referring to the same, another says, "of the common sort they were numberless that perished."† Dr. Mead asserts, "it has never been known when the plague did not begin amongst the poor."‡ Also Salvaresa, who wrote on the epidemic fever of 1754, at Cadiz, remarks, "amongst the poor it was most violent."§ Amid the poverty-stricken homes of the lower orders, are generally to be found in the greatest abundance those conditions which are calculated to generate disease. Their residences are generally in the most unhealthy localities of the cities or large towns in which they chance to live; the buildings that they inhabit are constructed with little or no regard to the natural laws, but with every reference to emolument on the part of some sordid proprietor; they are huddled together in confined apartments, which are ill-ventilated, and rendered impure by a redundancy of occupants; add to these the frequent accumulations of filth found in the vicinity of their houses, an insufficient supply of food and clothes, together with the want of cleanliness and domestic comforts, and too correct a picture will be drawn of the real condition of many thousands of the poor in this country. There were, comparatively speaking, but few instances of fever in the new town of Edinburgh, and those which did occur were in the back streets and similar places. Table No. 7 shews that out of 80 cases, which were taken promiscuously, no less than 66, being nearly seven-eighths of the aggregate, came from the Cowgate, Canongate, Grassmarket, West-port, and various wynds, the most humid, impure, and pent-up localities in the old town, the inhabitants of which are the most miserable and destitute set in the whole city.

In treating upon the subject at issue, such will be done as follows:—

* This Table gives particulars respecting 150 cases of epidemic fever in the hospital, during the month of August, 1843.

* Hecker, on the Epidemics of the Middle Ages, p. 209.
† Godwin, p. 23. ‡ Dr. Mead.
§ Dr. Mc. Lean.

1st. Some general observations on epidemics, also shewing that certain of the acknowledged states favourable to their propagation were present in this distemper.

2ndly. Its history.

3rdly. The pathology of the disease.

4thly. The sequelæ.

5thly. The treatment.

Lastly, conclusive remarks.

In so doing the chief statements advanced will be founded on the facts contained in original data, the writer being for many months in daily communication with patients labouring under the disease. The statistical tables, which give important particulars respecting nearly 1100 cases, were compiled with the greatest accuracy and care. There may perhaps be certain points passed over which other writers have noticed, yet it is trusted that the most essential diagnostic marks, as well as an investigation into those causes which seemed to be conducive to its development and extension, together with other details, will be fully and sufficiently embraced in the account. Facts are the only means whereby we can arrive at positive conclusions, and the relation of such must ever take precedence of speculative notions and theoretical opinions, though pronounced by the most undoubted and respectable authorities.

1*st. Some general observations on epidemics, also shewing that certain of the acknowledged states favourable to their propagation were present in this distemper.*

The definition to be given of an epidemic disease may be as follows: it is generally a febrile disorder, or of acute character, prevailing at irregular periods, varying in intensity, continuing for an uncertain time, attacking a number of people simultaneously, and depending upon some common cause. At one epoch or another every portion of the globe of which history narrates has been subjected to these calamities, and from the remotest periods of antiquity epidemic and pestilential diseases have scourged mankind. The earliest of profane writers mention these occurrences, and the sacred volume itself in numerous places, attests the same. In the great historical periods subsequent to the times of the ancient Babylonians, viz. those ages during the Persian, the Grecian, and the Roman empires, and especially by the profane writers of the two latter, these calamities are often adverted to; Homer, Thucydides, Herodotus, Livy, Lucretius, Pliny, Plutarch, Ovid, Virgil, and other of the ancients, make occasional references to the same. Passing on several centuries to the middle ages, we have the most awful accounts of pestilential visitations. The Black Death, as it was termed, that raged in the 14th century, extended itself throughout the civilised world, and visited every country from the plains of India to the shores of Greenland, in some kingdoms sparing but a tenth of the inhabitants! In the 17th century London felt the havoc of a plague, the details of which render its history one of the most melancholy accounts upon record. In more recent times still, epidemics have manifested themselves in different countries, though less frequently and of a milder nature. Epidemic occurrences of small-pox, typhus, cholera, scarlatina, &c. have with heavy mortality from time to time taken place; but reasoning from statistical sources of information, and comparing present with former mortalities, together with their being more uncommon, and of a less severe character in modern than in ancient times, it is fair to presume that civilisation has done much, and may still do more in warding off these terrific visitations; as knowledge increases and science advances, as those natural laws by which man stands in intimate relation to external objects and conditions are more understood and obeyed, and as the discoveries and improvements which are daily made in regard to the preservation of health and the treatment of disease are rendered available, so may we hope that the time will arrive when epidemic diseases shall be almost if not altogether unknown. Previous to the great fire in London, febrile disorders were constantly affecting the people in one part of the city or another; the streets and thoroughfares were then dark, damp, and ill-ventilated; little regard was paid to cleanliness, and innumerable impurities contaminated the air; in fine, most of those conditions which enter into the epidemic constitution existed. The

conflagration, though perhaps attended with incalculable loss of property, was ultimately followed by a general good. By opening out many hitherto pent-up and noisome localities, and thus perflation of air taking place, the streets that were re-built being wider, and the dwellings more spacious, the previous unhealthy situations became comparatively salubrious, and the citizens found that those calamities were not the unavoidable executions of divine wrath, but mainly owing to their own ignorance, and the consequent infringement of the natural laws. In former times Edinburgh was annually afflicted with severe attacks of typhus; but then the generality of the people lived crowded together. The wide, airy, and commodious new town was re-built; and at that time it was no unusual thing for the refuse of the city, the garbage of the shambles, and the general accumulations of organic matters, to be deposited at every corner; whilst the want of an efficient drainage, manure heaps placed in a proximity with the dwellings, and a disregard for cleanliness and domestic comforts, together with similar causes, acted as powerful predisponents to disease.*

Respecting the influence of certain external conditions, essential in the production of an epidemic attack, almost every author has been led to attribute an unusual degree of importance to some particular source. It would, however, be most correct to say, that epidemics spread more by a confluence of circumstances, producing when combined a common cause, than from any individual one. All causes, whether moral, social, or physical, that lower the tone of vital action, befit the body in some measure for its reception, and render it more susceptible of contracting the disease. The system during a state of positive health, may be exposed to noxious influences with impunity, that would under other circumstances (as debility and depression) render it highly accessible to any prevalent disorder: hence it is that the poorer parts of a population, who constantly labour under innumerable debilitating causes, are far more liable to become affected than their opulent neighbours. The houses of the rich are airy and spacious, and construeted more in accordance to the rules of health; their fortunate possessors have less cares, are better fed and clothed, and have a more liberal supply of the necessaries and comforts of life. During the epidemic of 1843-4, in the Scottish metropolis, it was remarked that those who lived in the houses in the bottom flats in Cowgate, Canongate, Grassmarket, High Street, &c. were by no means so commonly affected as the inmates belonging to the various stories above. Now this fact at first seems anomalous, for, *cæteris paribus*, epidemics are generally most violent in the dwellings of the ground-floor; yet, when the matter is inquired into, this apparent exception to a general rule becomes easy of explanation. The bottom houses being in more intimate proximity with the drains, sewers, and other sources from whence putrid exhalations are given off, we might reasonably suppose would be more unhealthy, and there a disorder be most prevalent, and very much more so than in the higher flats, especially when it is taken into account that many of the buildings, in the places referred to, vary from six to even ten or eleven stories high, an altitude so considerable, it might be thought, as to place them in some degree beyond miasmatous influence. The reason of this difference appears to be as follows: the occupants of the ground-floor houses are the majority of them small shopkeepers, greengroeers, pawnbrokers, victuallers, spirit-dealers, and the like, who are in tolerably easy circumstances; whilst, on the other hand, those who occupy the superincumbent strata of houses have chiefly but very narrowed means, or, what is not unfrequently the case, are in positive destitution; and the higher the ascent is made poverty increases in a corresponding ratio, the upper stories being let at a lower rent than the more convenient apartments below. This fact forms one amongst many incontrovertible arguments that the fever raged most where destitution existed; this part of the subject will, however, be more fully adverted to hereafter.

Epidemics are much influenced by endemic causes. The peculiar dispositions of any set of inhabitants, their natural inclinations to industry or inactivity, as well as many moral and physical agencies to which they are

* Combe on the Constitution of Man.

exposed, form conditions of weighty importanee in rendering them morc prone to any prevailing disorder. But by being repeatedly subject to such agencies, these in some measure, if not totally, lose their power, and the body in a most wonderful manner accommodates itself to existing circumstances. Those who have been accustomed to live in dry and elevated situations can seldom with impunity migrate to low and marshy districts; take the highlander from his hills to the close and humid valleys, and his health often suffers, at least until the system has suited itself to the change. The inhabitants of the tropies can bear without inconvenience, nay enjoy, a state of positive health, under conditions that must needs be highly dcletcrious to natives of the temperate zones. To endemic causes, then, epidemics may owe much for their various modifications. There may be certain statcs existing which are highly favourable to the propagation of disease, yet until the superaddition of somc other element entering into the causation, the specific poison might not come into full operation, or remain wholly incrt; also, where some of those conditions constituting the common cause should predominate, the disorder on becoming manifest might evince symptoms partaking most of the predominant cause. For instanee, in a wet and humid distriet, where a partieular form of fever is prevalent, it may require but heat or some atmospherie vicissitudes, an ill-fed depressed eondition of the people, or some similar oeeurrence, to bring into positive existenee a fearful epidemic; and the type whieh it assumed might partake most of the intermittent character, because here (in a wet and marshy district) were some of the chief causes of intermittents, while, it might be, the original disease, from whence the specific poison proceeded, possessed not previously the least symptom of the intermittent character; therefore predominating endemic causes may in some manner determine the naturc of an epidemic attack. Hufcland states, that "in the north of Germany, during the seasons 1815-16, thc weathcr was particularly wet, and the temperature low, yet the public health was very good; that intermittents and low fevers were very rare, even in marshy localities*." The reason why diseasc did not dcvelop itself as might have been anticipatcd under such circumstances, was in all probability mainly owing to an insufficient degree of hcat, or it might be other unknown causcs, to constitutc a state suitable to the generation of fever, it previously being mentioned, that cpidemics seem *to depend more upon a combination of causes than any particular one.* By way of example, supposing a given number of elcmcntary bodics were to be placed together, and no changc producecd, yet on the superaddition of one or more such elcmentary principles a chemical action ensued, and by this a product be formcd, dissimilar in all its appreciable qualities to any of the individual compounds, we should at once say such resulted from chemical laws—the laws of affinity—but how and in what manner the effect was performed, and why it required the superaddition of the last element or clements, would of course be inexplicable; and so it may be with regard to those conditions entering into the eonstitution of an epidemic disease.

* Copland's Dictionary of Practical Medicine, p. 767.

No. II.

In the discussion of this part of the subject, it may be well, in a brief manner, to mention individually some of the allowed predisponents to epidemic diseases.

Climate exerts a powerful influence upon living bodies, and in various ways renders them liable to morbid conditions. Atmospherical vicissitudes, geological peculiarities, flat tracts of land, overgrown woods and forests, stagnant waters, the soil being of an argillaceous nature, thus retaining the moisture and producing the decomposition of organic matters; situations that are confined, as creeks and narrow valleys, where the air is calm; countries in which are extremes of heat and cold, with similar states, greatly determine the degree of salubrity or unhealthiness in a district. Sometimes it has occurred, after important changes have been effected in the general features of a part, as by the clearance of underwood, drainage, a better cultivation of the soil, &c., that the climate has become altered in the most remarkable manner, and evincing such change the fevers previously witnessed in the country have assumed a different type.* Bleak and exposed situations, by the judicious plantation of trees, may be rendered more healthy. In some of the kingdoms of Northern Europe, in which are extensive bogs and morasses, where the soil is highly impregnated with vegetable matters, it might be supposed that intermittents would be common, seeing that this class of fevers is generally associated with marshy districts; yet such is not the case, because the temperature of those regions is too low for the promotion of the putrescent process. Analogous to this, it has often been observed, during the prevalence of fevers in cities and large towns, that the setting in of frosty weather has abruptly arrested the ravages of a distemper. In different latitudes different affections prevail; in the north countries typhus, inflammatory conditions of the air-passages, rheumatism and tubercular complaints; in the tropics, intermittents, remittents, and dysentery.

* Dr. Rush.

Seasons and Weather undoubtedly enter into the epidemic causation, and different disorders predominate as they vary. In Spring, small-pox, measles, and scarlatina; in Summer, low fevers; in Autumn, diseases of the mucous membrane of the alimentary canal; and in Winter, acute affections of the fibrous tissues, and typhus fever, are common. In some parts of the world certain seasons of the year are regarded as infallibly productive of peculiar complaints. A friend of my own, who had travelled in most quarters of the American Continent, informed me that the inhabitants of New Orleans annually anticipated the "sickly season" with so much certainty, that it was usual for the merchants and others at that period to remove several hundreds of miles distant, returning when the unhealthy months had passed over. Seasons in an indirect as well as in an immediate manner operate in the induction of disease; viz. by rendering the crops deficient and deteriorating their quality, especially in insular and other countries, where the natives mainly rely upon the productions of their own lands.*

Hippocrates in his time observed, that when the weather continued for a long period at one degree of temperature, not mattering whether of great heat or cold, then diseases were of less frequent occurrence, nor of so grave a character. During a long fit of dry or wet weather, a prevailing disorder will maintain an evenness in its symptoms, and if irregularities of temperature, &c. come on, the public health is more affected, and diseases will assume different features. In proof of this assertion, Tables IV. V. VI. and VIII. may be referred to. Table IV. (which was compiled during the autumnal months, when biliary complications are most prevalent), shews that the number of jaundiced, or "yellow eases," as they were usually termed, ran so high as 1 in 8.91, being an average taken from 330 eases then in the Edinburgh hospitals. In Tables V. and VI. taken about a month subsequent to the former, the number became less, being 1 in

* Annesley on the Diseases of India.

11.42; and in Table VIII. formed in the last month of December, 1843, a further decrease was observed to 1 in 16.07, and in Table X. drawn up in April, 1844, out of 80 patients labouring under the fever, only 2 of that number, being 1 in 40, were *yellow cases*. Here, then, we have an indisputable proof, that as the season and weather varied, the prevailing distemper altered in a corresponding ratio. It might be that electrical or other states were removed by a lower degree of temperature, or that certain impurities suspended in the atmosphere required the addition of heat in order to fully elicit their deleterious effects upon the body. High winds and tempests have been known to cut short a pestilential visitation.* In a calm, stagnant state of the air, the effluvia which it contains will of course be more concentrated, while a gale of wind might so far dilute the poison as to render it innocuous.

The Decomposition of Organic Matters by contaminating the air, powerfully predispose the body to disease; and when it is taken into account that the majority of the poor, especially in the cities and large towns, are almost constantly exposed to stenches emanating from sinks, drains, and cesspools, which in those localities where they reside are mostly loaded with filth, and the general accumulations from an impoverished and redundant population, it becomes not a matter of surprise that fevers frequently in such places prevail, but that they do not rage in a much greater degree. To give the reader an adequate idea of the evils in question existing in Edinburgh, the following description may be quoted from the Poor Law Report of 1842. "We entered a dirty low passage," says the author, "like a house-door, which led from the street through the first house to a square court, immediately behind which court, with the exception of a narrow path around it leading to another long passage through a second house, was occupied entirely as a dung receptacle of the most disgusting kind. Beyond this court the second passage led to a second square court occupied in the same way by its dung-hill; and from this court there was yet a third passage, leading to a third court and third dung-hill. There were no privies or drains there, and the dung-heaps received all the filth which the swarm of wretched inhabitants could give; and we learned that a considerable part of the rent of the houses was paid by the produce of the dung-heaps. Thus, worse off than wild animals, many of which withdraw to a distance and conceal their ordure, the dwellers in these courts had converted their shame into a kind of money, by which their lodgings were to be paid. The interiors of these houses and their inmates corresponded with their exteriors." * The foregoing quotation forms a most graphic account of the residences of the poor in the Scottish metropolis, and it might also with equal aptness be applied to Glasgow, Paisley, Dundee, and other towns in Scotland where the epidemic raged. From places to which the previous description is applicable, $\frac{3}{4}$ths of the patients admitted into the Edinburgh Royal Infirmary and supplementary Fever Hospitals, were brought. From Table VII. it is shewn that the number was nearly two-fold greater, as we there see that 66 out of 80 cases, being almost $\frac{7}{8}$ths, resided in streets, closes, and dirty wynds, similar to the places described; and in Table X. out of other 80 cases, no less than 55 came from like situations. In the Poor Law Report, to which reference has been made, the writer says that a vast population in the West of Scotland, when the kelp manufacture ceased, were reduced to the greatest want, "yet as their habitations were scattered, and in pure air, cases of fever did not arise among them." By constantly inhaling the putrid effluvia circulating in the atmosphere of those localities in which the poor dwell in the cities and large towns, the pernicious effects cannot fail to result in the production of disorder throughout the system, and when a distemper like the one to be described becomes manifest, how the predisponent in question will operate can readily be conceived.

Dense Population.—Where a number of individuals live crowded together in small and ill-ventilated apartments, the air becomes so vitiated as to be wholly unfit for the respiratory function. The oft-cited melancholy occurrence which took place in the Black Hole of Calcutta, is but the superlative degree of a condition, which in a com-

* Dr. M'Kenzie.

* Poor Law Report, 1842. Page 24.

parative manner goes on in some of the hovels of the poor, in manufactories, prisons, &c., in this country. My friend, Dr. Renaud, informed me that during the Scotch epidemic of 1843-4, he visited a family in Grassmarket, and no less than *seven* individuals were laid ill of the distemper in a close and dirty apartment, which was not more than 8 or 9 feet square. Some of the common stairs in the large towns of Scotland form the general entrance to forty or fifty, and sometimes a greater number of inhabitants. At the termination of each flight of steps, are main entrances to internal passages or *lands*, as they term them, and on either side of these lands are small, badly lighted, and ill-ventilated apartments, one of which frequently serves as the night and day room to a whole family; in fact one of these wretched places constitutes the whole house. When a fever breaks out in these thickly populated dwellings, its extension becomes inevitable, and from such pestiferous situations innumerable patients were conveyed to the hospitals during the epidemic. The extreme poverty and wretchedness of the people who inhabit them, give no choice in regard to their dwellings or the locality in which they are placed, their destitute condition binding them as firmly to those places as the polype is united to its rock.

Insufficiency of food and clothing, with the want of the comforts and necessaries of life, enter importantly into the epidemic constitution. That a bad and insufficient diet with any set of people is exceedingly favourable to an unhealthy condition of the body, is most undoubted, and cannot for a moment be the subject of hesitation. Whatever lowers the tone of vital action, whatever destroys the physical powers, renders the system prone to the contraction of disease, and when such disease is contracted, morbid action becomes far less supportable. Amid a desponding and half starved population, an epidemic attack is often attended with unusual severity, and scarcity of food has ever been regarded as a frequent forerunner of these visitations. Dr. Hunter says, "If other causes have slain their thousands, scarcity of nutritious food alone has slain its tens of thousands. My experience justifies and warrants me in affirming that, where people have not sufficient nourishment, there typhus manifests itself with all the horrors of a depopulating plague. Witness Ireland!" The evils insisted upon in an indirect mode are attended with destructive consequences; viz. by insidiously sapping the general health, and sowing the seeds of organic disease—as may be witnessed in the numerous forms of scrofula, &c. which in this country so fearfully swell the bills of mortality. Previous to the appearance of the epidemic in Edinburgh, hundreds of the poor had been in a state of positive destitution, and the various public charities had been innundated with applications for relief. Dr. Alison cites an instance where individuals had to live upon 4d per week; a pittance so inconsiderable as to render it an enigma how existance was in any manner maintained. With those families with whom the greatest poverty existed, there the fever most frequently occurred. Where food was with such difficulty obtained, clothes and other necessaries could scarcely be expected. In a cold and variable climate like that of Scotland, to be warmly clad is indispensable with the maintenance of health, and when such cannot be procured it becomes, like the former, a potent predisposing cause entering into the epidemic constitution.

Mental depression. — Between the body and the mind there exists a sympathy so intimate that the evils inflicted upon the one cannot fail to be extended to the other. The mind being depressed renders the system exceedingly prone to take on morbid action, whilst, on the other hand, mental excitement endows the body with a certain repellent power by which it is capable of warding off disease. Great national calamities, political disasters, stagnation in trade, and the like, are often the preludes to ill health, and the "strikes" of miners and manufacturers, have not unfrequently been succeeded by febrile affections. The French revolution exerted the greatest influence upon public health, and was marked by several wonderful effects which it produced in the people. The testimony of military writers has repeatedly proved, that high mental excitement can prevent the inroads of disease and arrest its development; and the van-

quished troops are always more sickly than their victorious enemies. Our unfortunate retreat at New Orleans too truly illustrates the fact. While the soldiers were engaged in active warfare the distemper which had previously existed amongst them was wonderfully checked; although the same physical causes to which they had been exposed, and that undoubtedly gave rise to the disease, remained in operation; but after the decisive charge had been made, the day lost, and thus all buoyant hopes extinguished, then it was that the fever returned with unwonted severity, destroying many whom the sword had spared. The epidemics in Ireland have generally been preceded by some common calamity, and, did space allow, numerous instances might be adduced where these visitations succeeded general depressions of the public mind. Dr. Alison, in his "Observations on the Fever of 1843-4," has shewn that the class of persons, with whom the epidemic was almost wholly confined, suffered under very great privations before the disorder became apparent; and that gentleman's facts, which he advances with respect to the poor in Glasgow, are quite in accordance with the data collected by myself in Edinburgh.

	Number examimed.	In full work when attacked.	In partial work "insufficient for support."	Wholly out of work.	Total destitute.
Glasgow Infirmary .	197	69	85	43	128
Havannah District .	163	53	83	27	110
Greenock Hospital .	76	13	53	11	63

In Table I. upon reference it will be seen that these results are quite in keeping with the facts ascertained in Edinburgh; viz. that by far the greatest number of the patients admitted into the hospitals in the distemper, were either wholly destitute or bordering upon destitution. In Table IV. it is stated, that out of 330, 146, *not one half*, were in constant work; 89 were partially employed, and 95 out of employ, so that 184 were unable to obtain a sufficient support. In Table VII. which gives particulars respecting 80 patients, 34 were in partial work, and 20 destitute, making 54, or more than 5-8ths, who were labouring under the evils of poverty at the time of their attack. That such circumstances would act as a powerful depressing cause is most obvious, and there can be little doubt that the epidemic was much more general on account of this condition, which was so common amongst the lower orders of the large towns where it chiefly raged.

Contagion.—There are few subjects through the whole range of medical science admitting of so much diversity of opinion, and that have been disputed with such warmth, as contagion; and considering how important it is in a political and commercial as well as in a medical point of view, is any doctrine within the limits of the physician's inquiries more desirable of a correct decision? seeing too, that an inclination to one side of the question or the other might involve the result of life or death. The accumulation of facts which from time to time might be collected, and a strict investigation being made relative to this point at each epidemic visitation, might perhaps have the happy effect of clearing up the inquiry, and satisfactorily settling a topic hitherto held in so much controversy.

Non-contagionists argue that fever may be generated by a combination of causes without the addition of a specific poison; but were we to sweepingly receive this opinion, facts would demonstrate that many unequivocal examples powerfully arguing in favour of an opposite way of thinking, would have, if possible, to be got rid of, and unheedingly passed over. It is true that sometimes a sporadic case may occur, apparently under circumstances highly favourable to the extension of the disease, and yet such extension not take place. But how do we know, that certain other elements entering into the causation, independent of those apparent, may not be wanting to form the epidemic constitution, and these of some subtle nature so as to escape detection, and elude the researches of experiment or otherwise; for instance (as mentioned

before), electrical or other states of the air? Again, presupposing the requisite elements necessary for the epidemic constitution to be in existence, it might be that they would require blending in definite proportions, as we know such to be the case with regard to the laws of chemistry. Therefore, from these premises, we may conclude, that it does not necessarily follow, that every sporadic case (admitting the means whereby the specific poison might be communicated), occurring, as we have said, amid the existence of *apparent* causes forming the epidemic constitution, should become epidemic. The proposition which I would advance respecting this subject, is, *that states similar to those previously enumerated, might cause an epidemic, yet they do not form the sole cause.* Why is it less probable that continued fever should have its prime origin in a poison *sui generis*, than that the virus of small-pox should be of a specific nature? We know that this disease existed in the world thousands of years ago, and in one part or another it has continued ever since. During the time of the Grecian Empire, small-pox was known, and that it was a disease which afflicted humanity in China and Hindostan, antecedent to the days of the ancient Greeks, there are good reasons for believing; yet who ever disputes its proceeding from a specific poison? Non-contagionists advance, that when a considerable time elapses, and a fever manifests itself, and no instance can be given whereby the poisons could have been communicated, that such a state of things would argue powerfully in favour of self-generation. We are aware, however, that the poison of some snakes, as also of rabid animals, will occasionally lie inert in the system for a considerable period, and then (when extraneous conditions, and certain idiosyncrasies furthered its development), come into active operation. Professor Alison, in his lectures, used to mention two cases which had come under his observation, that well illustrate the fact under consideration. The first was that of a man who had resided in the fens of Lincolnshire; he removed to Scotland, and lived in a situation that was elevated and clear of marsh miasms, yet after the lapse of *four months* he began in intermittent fever. The second was that of a student who had lived for some time near the Pontine Marshes in Italy; he afterwards came to Edinburgh, and at the expiration of *nine months* he had an intermittent. If the poison which produces intermittent fever can lie so long dormant, and then come into active operation, why may not that which produces another form—namely, the continued, be subject to similar laws? Instances of shipwreck have occurred, where almost every acknowledged element entering into the epidemic constitution existed, yet no fever became manifest. Dr. Watson, in his Lectures on the Practice of Physic, quotes from the benevolent Howard, who says, "If it were asked what is the cause of jail-fever, it would generally be replied the want of fresh air and cleanliness; but as I have found in some prisons abroad, some cells and dungeons as offensive and dirty, as I have found in this country, where, however, this distemper was unknown, I am obliged to look out for some *additional cause* for its production."* In a recent account of the Island of St. Kilda†, the author mentions an instance powerfully supporting the doctrine of contagion. The clergyman, resident in the island, informed Mr. Wilson that on various occasions he had observed, when a boat arrived from the mainland, the little community had become affected with an epidemic catarrh, which was easily traceable to the fishermen belonging to the mainland boat. At the battle of Corunna, our soldiers were affected with a peculiar form of fever, similar to which no cases existed in this country, yet on the arrival of the troops, after the engagement, at some of our seaports—nurses, medical officers, and others, whose duties brought them in contact with the sick soldiers, contracted the same distemper. As to the fever of 1843-4, indubitable proofs were afforded of its contagious properties. Most of the medical officers connected with the Edinburgh Royal Infirmary, and additional fever hospitals, were seized with it; 8 of the resident and clinical clerks in quick succession became affected, and out of that number no less than six were yellow

* Dr. Watson's Practice of Physic, Vol. ii., p. 703.

† Wilson's Voyages round the Coast of Scotland.

cases, and thus obviously in danger of their lives. The majority of the nurses and domesties took the disease, and of the former at one time no less than 19 were labouring under it. Some of the dispensary physicians, and other practitioners, took the disorder, as also several of the clergy, and visitors of the sick, whose duties brought them to the bed-sides of the patients. The few cases occurring amongst the higher classes, resident in the new town, were generally to be traced to the influence of contagion, the parties affected having had either immediate or indirect communication with those suffering under the disease.

Dr. Cormack, in his treatise on the fever, mentions an interesting fact, evidently proving that the distemper was communicable to remote parts, by means of articles of dress, &c. "Mr. Nicholson, from the Island of Skye," says the author, "one of my pupils, informed me that two reapers who had had the fever in Edinburgh, arrived in his neighbourhood after their return home, at the close of the harvest, when not a single case of fever had been seen in that district. The mother of these persons, with whom they lived from the time of their arrival, was in a few days seized with the disease, and died." Being intimately acquainted with the gentleman from whom Dr. Cormack received his information, I made several other inquiries relative to the fact, and found that the identity of the fever thus imported, with that form then raging in Edinburgh, was undoubted. Were ærial and terrestrial, or similar causes, sufficient of themselves to produce continued fever, we could scarcely attribute the foregoing circumstance to mere chance. According to the doctrines of contagion, no individual in the whole island—out of the total population, amounting to more than 25,000—was so likely to become affected, as the mother of the parties who were then convalescents from the fever, who washed their linen, and was of course brought into immediate contact with the inmates; and, as might have been anticipated, she contracted the distemper.

Of the gentlemen resident in the Edinburgh Infirmary, who acted as the surgeons' assistants, none took the epidemic, although liable to the same local and common causes, as the clerks whose duties lay in the medical wards, but they had no communication with the fever patients, and were not exposed to the poison, which at once accounted for their immunity. In Glasgow, Aberdeen, Dundee, Paisley, Leith, &c., the most undoubted proofs were afforded of its being of a highly contagious nature: and, did space allow, innumerable facts might be adduced in support of the assertion.

2ndly, Its History.—The first appearance of the epidemic in Edinburgh may be stated as occurring in February 1843; nor could I learn of any cases prior to this date becoming manifest in that city, although it was said to have been noticed in Glasgow so early as the month of December in the previous year. A short period elapsed before particular attention was directed to the disease in question, some physicians at the onset regarding it as an unusual form of synocha, others considering it a mild description of typhus. The numbers, however, who were thus oddly affected, increasing, the uniformity of the symptoms, and these of an anomalous character, soon led the hospital and dispensary physicians into a strict inquiry as to its nature and singular characteristics. From the novel pathognomonic distinctions which it presented, it was quite impossible to refer it to any nosological classification, nor had any of the faculty in Edinburgh, not even those most advanced in years, ever witnessed a similar disorder. Sydenham, in his time, experienced no little difficulty in properly classifying the various epidemic visitations which he has recorded, because, as they occur but seldom, sometimes many years intervening between two important attacks, the life of any one individual is too brief in order to arrive at any definite conclusions from personal observation. Some of the older authors imagined, that epidemics of an identical nature returned again in the cycle of their revolution, but at uncertain periods of intervention, that being as soon as the requisite condition necessary for their generation existed in the air, an element to which they mainly attributed their origin; but as there are many other agents besides the constitution of the atmosphere which importantly influence their production, this idea becomes fallacious and untenable.

Table No. III. shows the rapid manner in which it progressed in the Edinburgh hospitals, and by it will be seen that on the 20th March, 1843, the total number of fever patients amounted to 82; on April 3d, 89; May 1st, 95; June 29th, 117; and by July 1st, they had increased to 206. Thus did the numbers continue to become greater until November 20th, when there were no less than 478 fever cases accommodated in the Royal Infirmary and Supplementary Fever Hospitals. At this period it might, in Edinburgh, be considered at its maximum, the admissions at the hospitals affording a correct idea of its prevalence throughout the city. Upon reference to the records of the Royal Infirmary it appears that from October 1842 to February 1843, the highest monthly number varied from 53 to 74, and in the months of May, June, and July, 1842, the aggregate number of fever patients were respectively 76, 56, and 55, which if compared with the same months in the succeeding year, will show the great preponderance of the latter over the former. From July 1st, 1839, to October 1st, 1841, the total number of fever patients amounted to 2,248, including the febriculæ, the mildest form of fever. In six months, terminating on the 31st of January, 1844, there were no less than 3,162 cases of fever admitted into the Edinburgh hospitals, and innumerable applicants during that period were refused admission. Such an exceedingly great demand for accommodation in the public institutions of the Scottish metropolis is, perhaps, without a precedent at any previous period. The monthly average of admissions during the time when it was most prevalent varied from 531 to 638. I will here, however, insert the following table, that I copied from the books of the Royal Infirmary, for Dr. Alison, and which the Professor inserted in his pamphlet, published on the epidemic, in May 1844.

The numbers admitted into the hospitals each month respectively, from September 1843, to April 1844, with the previous average :—

1843.	No. admitted.	Previous average.
September . .	531 . .	87
October . .	638 . .	98
November . .	586 . .	121
December . .	544 . .	130

1844.		
January	465	129
February	300	90
March	256	93
April	93	77

In July one or two extra wards were opened speeially for fever, and quickly filled; the applieations for admission were every day more numerous, and it beeame obvious to the managers of the Royal Infirmary, that unless some steps were taken for additional aecommodation, the ealls of the many applieants who thronged the waiting-room would have to be unavoidably deferred or altogether denied. Under the unwonted pressure of cireumstances like these, at a meeting holden by the Board, it was resolved, that 20 or 30 beds should be fitted up in a spaeious hospital, then empty, in Surgeons' Squarc. In two or three days these were filled, and by the 8th of August the total number of both sexes in that establishment alone was no less than 55, and in a few days subsequent to that date had inercased to 85. On the 2Ist of August another house in Surgeons' Square was prepared for the reeeption of patients afflieted with this disease (Fever-house, B.), in which it was found that 30 beds eould be put up, and this plaee also a few days suffieed to fill. Table No. II. gives the exaet numbers in the various establishments at this period.

TABLE II.—*Fever Cases admitted into the Royal Infirmary during the mouth of August* 1843.

Males	141
Females	110
	251

Fever Cases, admitted into Fever Hospitals B and C, Surgeons' Square, during the month of August 1843.

Males	62
Females	79
	141
Cases in the Infirmary	251
Total	392

Owing to the eontinuanee of applieations it became indispensably neeessary to make even yet further provision. In the middle of September the managers entered into a contract for the building of a large shed or temporary hospital, to be erected in the grounds of the Royal Infirmary; this being of suffieient dimensions to contain 50 or 60 beds. In less than a week after its completion it also had reeeived its eomplement, and on the 15th October the number whieh it contained amounted to 55; and the total of fever patients now in the various hospitals had advanced to 452, as may be seen upon referenee to the subjoined table, which gives the exact number of fever eases on the first day of every week, from January 2d, 1843, to June 3d, 1844.

TABLE III.—*Shewing the aggregate number of Fever Patients in the Royal Infirmary and extra Fever Hospitals, on the 1st day of every week, from January 2d*, 1843, *to June 3d*, 1844, *inclusive.*

January	2	61
,,	9	64
,,	16	82
,,	23	80
,,	30	73
February	6	71
,,	13	76
,,	20	83
,,	27	80
March	6	71
,,	13	89
,,	20	82
,,	26	75
April	3	89
,,	10	85
,,	17	87
,,	24	87
May	1	95
,,	1	104
,,	15	108
,,	22	105
,,	29	117
June	5	112
,,	12	123
,,	19	120
,,	26	112
July	3	125
,,	10	135
,,	17	165
,,	24	198
,,	31	206
August	7	229
,,	14	280
,,	21	294
,,	28	306
Sept.	4	352
,,	11	371
,,	18	420
,,	25	469
October	2	471
,,	9	443
,,	15	452
,,	23	443
,,	30	431

November	6	458
,,	13	467
,,	20	478
,,	27	465
December	4	471
,,	11	451
,,	18	470
,,	25	463
	1844.	
January	1	453
,,	8	466
,,	15	433
,,	22	431
,,	29	440
February	5	413
,,	12	411
,,	19	382
,,	26	357
March	4	338
,,	11	322
,,	18	279
,,	25	265
April	1	230
,,	8	205
,,	15	188
,,	22	147
,,	29	133
May	6	105
,,	13	105
,,	20	96
,,	27	102
June	3	97

About this time a fever hospital was established in Leith for the reception of patients in that quarter; nevertheless the applications at the Edinburgh hospitals were, unfortunately, great as ever; and it not unfrequently happened that fifty or sixty tickets for admission had unavoidably to lay over until the succeeding day. There were at one time no fewer than a hundred applicants at the hospital when every ward and bed were completety filled—a circumstance probably unprecedented in Edinburgh: and from the accounts given of the fevers which visited the city in 1817-1820, 1826-1828, 1837-1838, or 1839, assuredly nothing like it occurred in those epidemics. Upon reference to the records of the great epidemics that have, during the last thirty years, prevailed in the Scottish metropolis, the numbers afflicted were never nearly so great as in the fever of 1843-4. In 1817-1819 (two years), the aggregate is stated at 2·470: in 1827 they were 1·837; and in 1828 1·862: but, as previously asserted, during the last visitation, the totality of eight months was so great as 3·162! The public dispensaries were equally inundated with requisitions for attendance upon the poor at their own homes; and those gentlemen who were in the habit of visiting them in different parts of the city gave the most melancholy accounts of the prevalence of the disease, and the utter destitution in which it had placed both individuals and families. Scarcely a common stair or house in the Canongate, Cowgate, Grass-market, West Port, and the various closes and wynds, but there the disease was present, or had recently existed. In Paisley, Glasgow, Dundee, Aberdeen, and other large towns in Scotland, similar accounts were given; and in those places, as in the metropolis, it was chiefly, if it might not be said wholly, confined to the dirty, ill-ventilated, and most noisome localities, the invariable residences of the poorest and most destitute class of the inhabitants. A gentleman who had visited Glasgow during the prevalence of the epidemic, stated that the pressure of applicants for admission at the hospital was equally great as in Edinburgh, and it there too became quite impossible to answer the innumerable calls for entrance into that institution. Nearly every close, wynd, and pent-up street of that city was the scene of the disease, and the pictures of misery presented amidst the poor who peopled them were of the most distressing description. In damp and badly-lighted cellars, where the atmosphere was loaded with humidity and impurities, upon beds of straw, with an insufficient covering, and scarcely the common necessaries of life, whole families were to be seen labouring under the distemper. Those who are far advanced in life assert with assurance that during the last half century, there never was known in Edinburgh so great a number of persons ill at one time as in the autumn of 1843. That this city has at various periods been afflicted with severe and fatal visitations of this kind is true, and the mortality may have been much greater, but the extent of misery resulting from an affection so general is almost without a parallel; and the same observation might, with equal correctness, be applied to the large towns above mentioned. The epidemic of 1817-20, when Queensbury House, in Edinburgh, was opened for the reception of fever-patients, is well remembered as

an alarming visitation from its extent of affection, yet we know that the numbers who took the disorder in the attack of 1843-4 were doubly greater than the former. The House of Refuge, and the workhouse, were, like the hospitals, overwhelmed with applications for admission; the public charities could scarcely in any manner meet the numerous calls upon their bounty, and their weekly expenditure became trebled in amount. The Destitute Sick Society, in their Report, stated as follows:—"If an overruling Providence do not interfere, an amount of outlay will be imposed on the Society which it is impossible to calculate; nor is it likely that the public subscriptions will adequately meet the pressing and still growing demands." Thus, all institutions founded for the poor and afflicted were in a like predicament from an overflow of applicants beseeching their assistance; and had matters gone on but for a little time longer in the same manner in which they progressed for several months, it is quite impossible to say how heightened would have become the scenes of misery, or what would have been the consequences.

At the close of the summer some persons offered an opinion that the disease chiefly existed amongst the Irish labourers, who annually come to Great Britain in search of agricultural employment; an argument, in all probability, ingeniously concocted by those parties who contribute little or nothing towards the general maintenance of the poor, and feel afraid lest an impartial and equitable assessment should be imposed upon them. Were well-digested legislative enactments brought into operation with regard to the poor in Scotland, there is great reason to believe that the epidemic visitations which are of such frequent occurrence in the cities and large towns of that division of the empire, would become more rare, and thus not only be the prevention of incalculable misery, but positively decrease the amount of mortality*. On reference to Table No. I. it is seen that out of a hundred and fifty patients, twenty-five only were Irish; and when it is taken into consideration that many, if not the majority, of these had come into the city in good health, and, by lodging in houses and localities where the disease prevailed (as I ascertained to be the case), had contracted the disease, the supposition that it was much restricted to, or caused by the influx of the Irish, is manifestly unfounded. That this class of individuals did not import the fever into Edinburgh or Glasgow appears very probable from the fact of the distemper having been observed in those places during the winter months—a season, above all others, at which the labourers belonging to the sister kingdom do not come to this country in search of employment. There is one circumstance, however, pretty certain, that the migratory habits of these people during the time of the harvest had not a little to do with spreading the epidemic over the agricultural districts; for it being a contagious distemper (of which, as previously stated, there were the most undoubted proofs), and their lodging amongst the poor in the various towns where it raged, the infection was thus most assuredly conveyed to remote parts. According to data collected subsequent to those given in Table I., the proportion of Irish became somewhat greater, which may be seen as under.

TABLE IV.—*Giving particulars respecting 330 cases of fever that were in the hospital in the month of October* 1843.

Scotch	256	1 in 1·29
Irish	63	1 in 5·24
English	11	1 in 30
Males	159	1 in 2·07
Females	171	1 in 1·93
Married	152	1 in 2·17
Unmarried	178	1 in 1·85
Natives of Edinburgh	177	1 in 1·86
Resident 14 years in do.	32	1 in 10·31
Resident 3 years in do.	34	1 in 9·7
Epidemic	320	1 in 1·03
Genuine typhus	10	1 in 33
True typhoid measly eruption	10	1 in 33
Yellow cases	37	1 in 8·91
Fully employed	146	1 in 2·25
Partly employed	89	1 in 3·07
Out of employ	95	1 in 3·47
1 Relapse	167	1 in 1·97
2 Relapses	29	1 in 11·38
3 Relapses	5	1 in 66
4 Relapses		1 in 330.

* For information relative to the manner in which the poor are supported in Scotland, and the great need that there is for improved regulations, I would refer the reader to the writings of Professor Alison, who has so long honourably laboured, more than any individual, to ameliorate their condition, and whose name is not only held in high estimation wherever the science of medicine is cultivated, but on account of his many acts of philanthropy and unbounded charities, is justly entitled to universal esteem.

Out of 330 cases of fever in the hospitals, during the middle of October, 63 were Irish, being 1 in 5.24 of the aggregate, and eleven were English, being but 1 in 30. As the year advanced the disorder seemed to extend itself into the country, numbers of patients being brought from Dunbar, Haddington, Pennieuick, Musselburgh, &c., so that it was not now, as at the earlier parts of the season, confined to the cities and large towns, but had become extended to the provinces.

A new fever presenting itself, as may be supposed it ere long attracted a host of investigators as to its positive nature, and at the various medical societies in Edinburgh the subject was fully and freely discussed. Some physicians considered it a modification of typhus, and others stoutly contended for its arising from a poison specifically different from that which produces the usual forms of continued fever observed in this country. Professor Christison, at one of the meetings of the Medico-Chirurgical Society, expressed his opinion with some positiveness that the epidemic of 1843-4 so nearly resembled the fever of 1817-20, described by him in Tweedie's Library of Practical Medicine, as to leave no doubt as to their identity. The Doctor, however, acknowledged that he had seen but a very limited number of cases in the recent epidemic, and probably his conclusion was in some degree arrived at from the accounts of others whose opportunities for observation had been more extensive. With all deference to so high an authority as Dr. Christison, there were many and important disagreements between the two, though in certain respects an undoubted similarity existed. The relapses in the fever under description were far more frequent, the yellow cases more numerous; the distemper of 1817-20, according to Dr. Welsh and others who recorded it, was of a much more inflammatory type, and required more depletive treatment, with other dissimilarities, at once disproving their positive identity. Professor Henderson, in an able account which he published in Craigie's Journal (Jan. 1844), pointing out the difference between it and the genuine typhus, says:—"The epidemic began to prevail in February 1843, and the very first case that came under my notice I distinguished at once as widely different from every form of fever that I had previously seen." Professor Alison ultimately expressed his conviction of its being a NEW DISEASE, though at the first he was not so fully satisfied as to that point. The subsequent facts, to be detailed in these papers, will, I trust, remove every doubt as to its not being a new disorder. Dr. Welsh, in his Treatise on Blood-letting in Fever, says, that in the epidemic of 1817-20, instances were observed where the same individual had as far as three distinct attacks in the course of a few months. Again, he remarks, "I believe that several of the nurses in the Royal Infirmary had a second attack." Several cases came under my own notice where persons had a repetition of the disease in the course of a few months, but I do not remember any instance where one individual had three attacks, as mentioned by the author above cited.

There were undoubtedly some considerations which led to the supposition that the epidemic bore certain resemblances to the suette, or sweating fever of Normandy. In a few instances, though these were of very rare occurrence, the epidermoid tissue was raised into vesicular eminences, varying from the size of a millet-seed to the section of a small pea, these vesicles containing a transparent fluid and quite unattended with any areolar blush; on the third day they became shrivelled and opaque, and were desquamated in thin furfuraceous scales. From the occasioned presence of these bullæ with other nosological characteristics, some degree of similarity certainly was manifest between it and the suette. There were physicians who endeavoured to shew its near alliance to the yellow fever of the West Indies, indeed gave it as their opinion that, in some respects, there was a positive identity between the two, only that the epidemic prevalent in this country had become greatly modified by climate and other circumstances calculated to alter its general features. When we take into consideration the usual number of yellow cases,—that in Dundee there were several instances of black vomit, though in Edinburgh I did not see more than two or three cases, together with certain less important correspondent symptoms, we are compelled to admit that the assertion

is not wholly unfounded: no trace of its importation to Scotland, however, could be found, which has generally been done where yellow fever has been communicated from one country to another. In 1793, Dr. Chisholm traced the yellow fever into the island of Grenada, and numerous cases are upon record where ships have conveyed the disorder from one remote part to another. Some of the physicians in Glasgow, (who espoused this opinion), at one time imagined that it had been first imported into that city by merchant vessels coming from the West Indies; this idea, however, was more fanciful than real, no facts being adducible to attest the truth of such allegation. Dr. Spittal of Edinburgh pointed out a likeness between it and an epidemic that occurred in Greece near three thousand years ago, and according to the description given by the ancient writer, in certain particulars they may be said to resemble each other. From the various histories of Irish epidemics which have from time to time been the scourge of that kingdom, some of those attacks seem to have been very much like the epidemic now under consideration, particularly the fever of 1818-20, which from the almost universality of its crisis occurring on the fifth day, was termed by the vulgar *the five days' fever*, and that disorder, like the affection of 1843-4, nearly always resolved itself by a well-marked and copious diaphoresis. Dr. O'Brien, who gave an account of the Dublin epidemic of 1826, mentions nosological characters of that disease which evince a decided resemblance to the one now described. The author says, "it was distinguished by its short periods, terminating in three, five, seven, or nine days, but the second of these periods was the most frequent. The person previously in perfect health would be seized with sickness at the stomach, headache, pain in the small of the back, and chilliness. On the approach of the evening all these symptoms increased, and the febrile paroxysm was formed, the chilliness increased to a rigor, the nausea to vomiting which harassed the patient during the first three or four days of his fever, in the form of an empty straining, and frequently continued through the whole course. On the evening of the 5th or 7th day the exacerbatio critica commenced' which, mostly with the intervention of a rigor, but very frequently without this symptom, terminated in a profuse perspiration, which continued through the night, so that on the following morning the crisis was complete, and we generally found the patient convalescent."* These particulars relative to the Dublin fever of 1826, tally so nearly with the account to be given of the pathological characters of the epidemic under discussion, as to warrant the statement that no febrile disorder of recent occurrence, in the mode of its attack and resolution at least, bears so striking a resemblance; only that the fever of 1843-4, instead of resolving itself on the fifth day, for the most part had its crisis on the seventh; therefore it might be termed the *seven days' fever*, (Tables No. V. VI. and IX.)

Had the disease been of a more malignant nature, and thus requiring greater care and attention in its treatment, the results could not have failed to have been of a very calamitous description, the numbers affected being so considerable that it was quite impossible for the unfortunate persons who were unable to gain admission at the hospitals to procure the requisite medical attendance;—luckily, however, active remedial means were not in the majority of cases indicated, and many went through the disorder without any medical attendance whatever. There can also be but little doubt, that if sufficient hospital accommodation had been readily provided at the very outset of the attack, it would never have become so general in Edinburgh. As it was, from the limited provision in the public institutions, innumerable were obliged to remain at their own homes, often amid a numerous family in apartments and localities densely populated, and in every other respect highly fitted for the propagation of a distemper; hence in a great manner was the mode in which it became so prevalent. Many instances were observed, where an individual became affected, and from being obliged to lie in the same room with the rest of the family, every other member subsequently took the disease. Again, the afflicted on remaining at their own

* Cormack on the Fever of 1843, p. 101.

homes were visited by friends and neighbours, who communicated the distemper to other and distant parts of the city, and with these, in like manner, similar circumstances operated in its diffusion; hence, it is unquestionably obvious, that a prompt outlay on the part of the civic authorities, and the charitably disposed, on the appearance of the first cases, would not only have saved much expense, and called for a less demand on their bounty, but would at the same time have been the prevention of incalculable misery, and in a summary manner tended to check its ravages.

Upon interrogating the patients as to the cause of their attack, they for the most part ascribed it to wet, cold, or contagion, and could generally remember some particular period when one or more of these assigned causes had been in operation. In Table No. VII. out of 80 cases, 28 (1 in 2·85) referred this affection to contagion, 17 (1 in 4·7) to wet, and 13 (1 in 6·15) to cold. Those who imagined that they had contracted the disease by means of contagious influence, would frequently mention their having visited a friend or relative labouring under the disorder, or, what was more generally the case, assert that the distemper was raging in intimate proximity with their dwellings. The two latter causes, viz. wet and cold, had for the most part immediately preceded the accession of their attack, and were consequently adduced as the only reasons they could suggest giving rise to their affection. Most writers upon fever, especially those who have recorded great epidemics, notice the fact of patients attributing their malady to the foregoing causes; and when we consider what a powerful excitant the effects of cold form, and the unequivocal proofs that are so frequently afforded of contagious and infectious influence, the conclusions thus arrived at seem very plausible inferences. When the system has contracted an infectious matter which may for some time lie latent, any debilitating or depressing influence may so affect the body as to act as a proximate cause, and thus develope the impending disease; and perhaps few if any causes are more calculated to act as an excitant than cold. We are aware that a convalescent from fever will on exposure to cold have a relapse, and such relapse be marked by a very near repetition of the primary symptoms, yet we are not to conclude that cold, *per se*, can produce fever, however the vulgar may protest, and coincidences seem to favour the supposition; but we must merely regard it as a proximate cause, though perhaps one of the most powerful in the induction of fever. Sir Henry Marsh is of opinion, that "cold like contagion is an impression made upon the sentient extremities of the nerves." Thus, there being conveyed a positive sedative effect to the great nervous centres, the whole system becomes depressed, and such depression necessarily constitutes a state highly favourable to the development of the febrile phenomena. Fear, by producing like effects, is attended with similar results; hence, it not unfrequently happens that those persons who are exceedingly afraid of contracting a prevalent distemper are the first to become its victims.

Females were more frequently affected than males, and both sexes when under puberty seemed to be less susceptible of its infection than adults. In Table No. IV. out of 330 cases at one time in the hospitals, 171 were females, and 159 males; Table No. VIII. which gives particulars respecting 450 cases taken in January 1844, shews that out of that number 240 were females, and 210 males, being a majority of $\frac{1}{15}$ of the former over the latter; in Table No. IX. 24 were females, and 16 males; in Table X. 45 were females, being 1 in 1·77, and 35 were males, being 1 in 2·28; in Table XI. out of 159 patients, 91 were females, and 68 males; and in Table XII. out of 32 patients, no less than 26 are females, and only 6 males; thus out of 1·091 cases above mentioned, 597 were females, and 494 males, the former exceeding the latter by a fraction more than ten per cent.

From 20 to 40 years of age appears to have been the period at which the greatest liability to the disease existed, as in Table No. VII. it is shewn that out of 80 cases one half were during that period, and only one fourth of the aggregate were under 20 years of age; 18, or 1 in 4.44, were from 40 to 60, and but 2, or 1 in 40, were above sixty. In Table VIII. out of 450 cases, 130, or 1 in 3·46, were under 20 years; 217, or 1 in 2·07, from 20 to 40; 85, or 1 in

5·29, from 40 to 60; and 18' or 1 in 25, were sixty years and upwards. In Table IX. out of 40 cases, 6, being 1 in 6·66, were under 20; 26, being 1 in 1·53, were from 20 to 40; 7, or 1 in 5·71, from 40 to 60, ond 1 above 60; in Table XII. out of 29 patients whose ages were aseertained, 12 were under 20, being 1 in 2·41; 13, from 20 to 40 being 1 in 2·23, and 4 from 40 to 60, being 1 in 7·25. Thus in an aggregate of 588 eases here given, the average runs as follows;—168, or 1 in 3·5, were undet 20 years of age; 296, or 1 in 1·98, were from 20 to 40: 104, or 1 in 5·65, from 46 to 60; and 21, or 1 in 28·95, were 60 and upwards. Hence we see that nearly half or the whole number eame under the second period, (from 30 to 40,) which is an interesting faet, when it is considered that such is arrived at from well nigh 600 cases; and shews that in this fever the affection was generally observed as oceurring during a partieular time of life.

3. *The Pathology of the Disease.*

The fundamental pathology of fever is very imperfectly, if at all understood, whilst the various and conflicting theories which have at every period been propounded as to the prime seat of the affection, instead of elucidating a long disputed question, and decisively settling a subject of contention, that has, both in this and other countries produced innumerable learned dissertations, and elicited many warm discussions; those theories have, from the many and apparently cogent arguments put forth defensive of favourite doctrines, only tended to render more intricate and doubtful a matter still fraught with more than common difficulties in its solution. Those who are at all acquainted with the literature of this particular part of the subject now treated of, must be well aware of the perplexities and obscurity in which it is involved, and the desirableness which there is, that our knowledge, not only respecting the fundamental principles of the pathology, or as Bateman terms it the "essence of fever," but also as to those conditions requisite for the production of the proximate cause, were more accurate and indisputable: so long, however, as the great diversity of opinion, and the want of demonstrative proof, which there are on these points, exists, thus long will our notions not only as immediately regards the curative measures, but as to other important considerations in the establishment of a precise and definite acquaintance with its true nature and phenomena, be based upon no fixed and legitimate principles, but reared upon uncertain and hypothetical grounds: nor is it without a full consciousness of these facts, and a thorough conviction of the difficulties which beset it, when a brief advertence is made to the question, as engaged in the subject of these papers.

In any matter of scientific inquiry, where inferences can only be arrived at by mere theoretical reasonings, very dissimilar, nay, positively opposite, notions are sure to be entertained, because, as the deductions are then formed according to some particular hypothesis presupposed by the reasoner, and as different original inquirers may take up different fundamental views, so must the results come to in like manner vary; and thus it has been and continues to be, with regard to certain branches of philosophy where substantial facts and irrefragable evidence are not producible.

Whatever our information may be relative to the true nature of febrile diseases, it is abundantly evident that very much is still to be acquired before we become satisfied that we are possessed of positive conclusions—conclusions upon which the superstructure of a rational treatment is to be based, and it is repeated while our dubiousness as to many essential considerations exists, so long shall we feel perplexed and baffled in the endeavour to guide the disease to a successful termination. No better proof can be given of the unsettled and indefinite knowledge which we possess regarding fever, than that almost every author of eminence fosters opinions at variance with other writers, and that scarcely any two physicians who have set themselves up as authorities are unanimous on all points. When we take into consideration that from the remote times of Hippocrates down to the days of Hoffman and Cullen, some of the first and most inquiring minds that ever adorned any department of science have exerted their best energies in the laudable endeavour to build up a true and an incontrovertible doctrine as to the cause of fever, and that amongst such illustrious individuals the greatest discrepancy and the most diametrically opposed opinions have been entertained, we become impressed with the conviction that on some of the abstruse points in medicine our knowledge is exceedingly crude and imperfect, and that philosophical investigators have yet very much to discover. When we reflect that in the course of fever how impossible it is to prognosticate with any degree of certainty the supervention of particular symptoms—in what order they shall

be observed—which precede or succeed each other—the degree of intensity by which they shall be characterised—which is the primary affection, and which is the secondary—that dissection not unfrequently reveals lesions that were quite unsuspected — that death occasionally supervenes where the morbid conditions of the organs necessary to vital existence are not at all calculated to induce a fatal result, that is, according to the best of our opinions relative to such morbid states —how unfrequently our wisest discrimination is, or appears to be, totally fallacious—and that the greatest care and apparently the most correct judgment displayed in the treatment seem abortive and erroneous—when we reflect upon these facts, we are painfully reminded that our knowledge respecting the radical principles of the disease is exceedingly limited, and that the greatest inducements are held out for the attainment of more positive intelligence to direct our practice. All information to be gained not only of this affection, but as regards diseases in general, is reducible into one grand consideration; viz. to empower us with the means of averting the tendency to death, whether immediately or indirectly, which can only be done by arresting anormal action in the vital organs properly so called, and this must be affected before such structural changes take place, as are necessarily followed by a cessation of the vital functions: hence if we can gain a clear and succinct knowledge of what those anormal actions are in their incipient state a most important difficulty would be overcome, all diseases being far more capable of cure at the outset than they are when in an advanced condition. In fevers, as stated, grave changes may be going on in some visceral organ which do not present symptoms sufficiently prominent to warn us of their existence, at least we are not in the present state of medical science possessed of the kind of knowledge which is requisite for their detection; and it is indeed surprising, when we consider that so many centuries have passed since philosophers first turned their attention to the study of this class of diseases, that our information respecting febrile affections is so vague and inconclusive. Whatever may be the cognisable appearances of morbid action on dissection in the vital organs properly so called, from inductive reasoning we are bound to admit that the nervous power proper to those organs is in some manner primarily vitiated, but in what such vitiation consists we cannot decide, and if we could but know what was the actual diseased action, and from what condition or combination of states it proceeded, the evils resulting from the consequent disorder of the other functions; viz. the circulatory, secretory, and excretory, which are intimately dependent upon the former, might perhaps be much more readily averted.

The nervous influence proper to the vital organs being disordered previous to that which takes place in the functions of circulation, secretion, and excretion, which, as just enumerated, are the invariable sequents in the circle of diseased actions which operate in febrile diseases, it follows as a rational inference that the morbid conditions resulting immediately from the latter functions will be precisely commensurate with the degree of intensity of the former; viz. that of the nervous function. The observable phenomena of fever, then, are directly dependent upon the morbid condition and altered action of a certain organ or organs, and the degree of intensity with which such organ or organs may be affected determines the general character of the fever, and renders it of a mild or an alarming description. Thus far are we possessed of information relative to the phenomena of fever; viz. that the nervous and sensorial functions in the series of changes which constitute the febrile affection, precede the disorder of the other functions, but whether the nervous function be in an occult manner primarily affected by a vitiated state of the blood, as some theorists have contended, we cannot determine, this being the *questio vexata* hitherto undefined.

The humorists, the solidists, and the chemical pathologists*, have each endeavoured, and some with great ingenuity, to support their respective notions, yet if we espouse the one or the other of their doctrines, the etiological deductions arrived at, even with those that seem to bear the greatest semblance to truth, may be assailed by many and unanswerable objections—

* Paracelsus, Van Helmont, Campanella, &c.

objections that in no slight degree invalidate whichever way of thinking may be adopted as the most plausible and correct. When the physician is called to a case where the febrile symptoms are of an inflammatory order; for instance, when the brain and its members are affected—when he sees a dry and parched tongue, a glossy ferocious looking eye—when the skin is hot and burning—the pulse quick and strong—the urinary excretion high coloured, and voided in decreased quantity, with other symptoms of excited vascular action, he favourably reviews the solidal theory.* If on the other hand a patient be observed labouring under the highly congestive form of the disease — where there is great prostration—a livid pallor of the countenance—diminution of animal heat—a small and compressible pulse—the lips and teeth covered with sordes — petechiæ and vibices scattered over the surface, with an obvious tendency in the whole system to run on to a state of putridity—the humoral doctrine then appears far from being incorrect. To draw the line of demarcation, however, between what may be termed a humoral or a solidal pathology is obviously extremely difficult, for if the location of the primary morbid action be assigned to the capillary extremities, it is impossible, so far as our means of observation allow, to positively affirm where the one terminates or the other commences; in fact, the matter there, according to the best inferences to be drawn by our senses, becomes of homogeneous structure; hence those commonly received notions, which are founded upon a positive division between the solids and fluids, are strictly speaking according to the rules of physiology a mere arbitrary distinction; an assumption that cannot be borne out by ocular demonstration or any inevasive proof. In support of the foregoing assertion the following passage from Andral may be appropriately cited. "The division of the parts of the body into solids and fluids," says that eminent morbid anatomist, "seems to be a distinction of small importance, and that is not always just, since it ceases to exist in the intimate structure of the organs, in which all the grand vital phenomena take place, and in which also occur all the vital changes which constitute the vital state." There is one thing, however, quite undeniable, that disease must exist in one or the other of these, and perhaps the most correct assertion would be that it is situated in both; at least we find that in its course both fluids and solids evince unequivocal symptoms of diseased action; but to which may be assigned the priority, as previously said, we are not enabled to determine. The humoral theory was the first given to the world, and until the middle ages was implicitly received by the Arabian and other physicians who flourished at those remote periods. The philosophic mind of Galen so firmly believed in the Hippocratic doctrine, that he not only subscribed to the opinions of his great archetype, but endeavoured to extend his views and establish their truth. When the ancients observed cases of fever of the highly congestive form, when they beheld the excretions so vitiated, with a general evidence of a proneness in the system to pass on to putridity, we may readily suppose that they would deem the humours of the body as the chief seat of the disease. When we consider the manifest disadvantages under which they laboured in those distant periods—that their knowledge of the human frame was merely an inference deduced by the comparison of the lower animals, and not founded on any real observation in itself—that the grand discoveries respecting the vascular and nervous systems – systems upon which the vital functions immediately depend, were unknown; and that the light which other branches of philosophy in latter times has diffused explanatory of many mysteries which at those remote periods were obscured by the dark ignorance of the age—when we consider these facts it is scarcely to be wondered at that many of their notions have become exploded, and that more recent opinions are held in higher respect, where demonstration and proof can be brought to bear confirmative of theoretical argumentation.

In important epidemic visitations,

* At one period the solidal theory was much more regarded than any other in the continental schools, and especially in France: since the views of Broussais, Louis, and his pupils, and some others, the tide of public opinion has greatly turned, and is still progressing in favour of the humoral pathology, showing the vacillation and uncertainty yet existing on the subject.

where great uniformity has been observed in the distinguishing symptoms of the disease, where after death the lesions were found of one description, together with a sameness in the general phenomena presented, physicians have then been led to incline most to those doctrines promulgated by the schoolmen, which seemed to evince the closest resemblance to the facts under observation. If the brain and its membranes were found injected, and giving traces of inflammatory action, the views of Grandoilliers, Wendelstadt, Ploucquet, and Clutterbuck, have attracted their converts; if much other visceral complication, the deductions of Stahl, Juncker, Sprengel, Armstrong, and others, have been held in estimation; and if the mucous membrane of the digestive canal were found much affected, the opinions of Rhan, Prost, Baillie, Louis, and Broussais, especially the last mentioned, who has so zealously endeavoured to found this theory, have been esteemed.* Many of the conclusions arrived at, however, even by those who have set themselves up as the establishers of an original doctrine, are exceedingly unphilosophical and based upon tottering principles, their promoters having erred because they built up a new theory, and subsequently tried to supply the facts corroborative of certain views, instead of first studying attentively the operations of nature, and then endeavouring to account for the manifested phenomena on the pure principles of demonstration and science. One of the older writers, who was impressed with this conviction, says—"The distribution of distempers into kinds is commonly done to serve some hypothesis founded upon the true phenomena, and hence this distinction is rather adapted to the bent of the author and his manner of philosophizing, than to the nature of the disorder." The master mind of Sydenham, though perhaps inclined to the chemical pathology, saw the absolute necessity of casting off the trammels of the schools, and divesting itself of the fallacies they enjoined; instead of unquiringly subscribing to received hypotheses and trying to become himself a renowned theorist, laudably descended to study minutely the workings of nature, and by a watchful observation of the phenomena which diseases manifested, made himself acquainted with many peculiarities and distinguishing characteristics that were hitherto unknown. Bacon found other branches of philosophy in a most unsatisfactory state—the dogmas of the ancients were implicitly embraced, and their chemical imaginings oft sweepingly adopted, without any original or independent spirit of thinking on the part of those who boastingly assumed to be the cultivators of science; his penetrating genius, however, at once saw that to strike into another and new path in the investigation of truth was quite indispensable, and that demonstrative facts could alone rightly supply the void to be made by the rejection of the equivocal tenets entertained by the schoolman and his contemporaries, which mere custom, or the listlessness and mental inactivity of the age, had blindly acknowledged; and what this great reformer in the pursuit of knowledge did for philosophy in general, Sydenham achieved for medicine.

That there is a great and an important difference between symptomatic and idiopathic fever appears undeniable from certain considerations, although, as above stated, there are, and very talented, physicians, who have stoutly disallowed this difference. To entertain a correct theory is of paramount importance, as regards diseases, because upon these theories we found our practice. Pinel has given very sensible and cogent reasons, to show that these two kinds of fever, so called, are essentially dissimilar. Our nosology on many points is very illogical, and the terms employed are quite inexpressive of the meaning which ought to be conveyed: if the orders, febres, and phlegmasiæ, are not identical, symptomatic fever is an expression that might advantageously be expunged from the medical vocabulary altogether, and it might be well to substitute some other phrase, denoting the general disturbance to which a local affection may give rise. Words are but the vehicles of our thoughts—the passive means whereby our ideas can be communicated, and if there be ambiguity, and the want of succinct perspicuity in those means, the ideas themselves intended to be conveyed may be misconstrued or not fully comprehended.

* Bonetus, Bartholinus, Petit, Serres, Bretonneau, &c.

There is no consideration relative to the subject at issue demanding greater attention than that which endeavours to point out the specific difference which there is between pure fever and inflammation, because these differences demand an opposite mode of treatment, and thus frequently the greatest dependencies are based on the decision. The definition given by Cullen of this first order, viz., febres, is as follows: "Pyrexia, after languor, lassitude, and other signs of debility, without any primary local cause." Boerhaave reduced the signs of fever to three grand heads, and contended that without such symptoms fever could not be present: these were, "shivering, frequent pulse, and heat." "A fever," says Fordyce, "is a disease which affects the whole system; it affects the head, the trunk of the body, the extremities; it affects the circulation, the absorption, and the nervous system; it affects the skin, muscular fibres and membranes; it affects the body, likewise the mind."* That fever is not inflammation, nor referable to mere local complication, as some have erroneously imagined, appears pretty evident from the following considerations, viz.—

1st.—Because we have the strongest reasons for believing that fever can be produced by miasmatous poisons, and the phlegmasiæ cannot.

2nd.—Cases of fever are seen where the traces of morbid action are not at all commensurate with the degree of intensity of the symptoms before death, and dissection not unfrequently proves that a fatal termination may ensue, where no indications are discernible of congestive or inflammatory action, or at least such morbid appearances as may be detected seem quite incapable of totally arresting the natural performance of the vital functions.†

3rd.—The unequivocal symptoms of idiopathic fever may be manifest, causing much constitutional disturbance, prior to the existence of any positive local affection, because the topical complication proceeds from, and is produced by, the conditions incident to the second stage, viz., that of high vascular excitement, which vascular excitement is in a great measure caused by the first stage, that of congestion; and the balance destroyed in the circulation from some hitherto unknown state in the system, during the first stage undoubtedly gives rise to the subsequent local affections, and the degree of intensity by which these affections are marked determine the mild or malignant character of the disease.

4th.—The cure of the topical complication does not cut short the disease.

5th.—The constitutional disturbance may be so great as to mask a local affection that will occasionally usher in a fatal result.

6th.—There is in fevers a natural tendency to progressively become worse, until they reach their acme, when some critical discharge from one or more of the emunctories of the body takes place, from which event gradual symptoms of amendment supervene, a circumstance seldom witnessed in pure inflammations, and certainly never in so marked a manner.

7th.—Fevers may be communicated by personal contact, or by means of the emanations of an infectious effluvia from the affected body.

8th.—The secretions and exerctions in fever are more vitiated.

Lastly.—Fever seems to be constituted of certain changes taking place in the system, which changes or events as they have been termed, decidedly differ in their predominant characters from those which are observed in simple inflammation.

The order of succession by which the conditions in question take place can with certainty be prognosticated in fever, as insisted upon above, viz., that the nervous and sensorial functions

* Fordyce, "Dissertation on Simple Fever," p. 27.

† Those who have had opportunities of repeatedly witnessing post-mortem examinations of fever, must be well aware of the correctness of the remarks put forth in the text; nor are there almost any accounts recorded of important epidemic visitations, where it has not been noticed that inspections have thrown but little light on the fundamental causes of the disease, and the mode in which it directly induced death; and when it occurs in a sporadic form, the same remarks are equally applicable. Upon a careful examination of the bodies of many fever patients, during the time that I was officially engaged in the pathological theatre of the Edinburgh Hospitals, I witnessed a number of instances of those who had not only died of the epidemic, but also of the ordinary typhus that prevails in Edinburgh and other large towns in Scotland, where no lesions could be discovered that seemed at all calculated to produce a mortal issue.

Case No. XI., to be subsequently given in these papers, forms one of many examples in the epidemic (especially in patients who suffered under the disease when at an advanced age) where no morbid traces at all worthy of note were detected.

are the first in the train of diseased actions in idiopathic fever, while we know that the brain and spinal marrow are not necessarily the first to be affected in the phlegmasiæ. The foregoing facts observation has fully established, but we are not possessed of the means of deciding which of the vital organs, properly so called, shall become secondarily affected, nor the intensity of such affection; respecting such in the present state of our knowledge we cannot determine. We know that symptoms are only the results of certain causes, and that to produce those symptoms the causes must operate whether in a latent or apparent manner, and that those symptoms correspond to the power of the first cause. We are aware that a case of pneumonia may be ushered in, and go through its course, without the great nervous centres being primarily disordered, and if such become affected it is last in the series of changed actions. Supposing such case of simple pneumonia to assume what physicians term a typhoid condition in its advanced stage, it would still be very different to the complication sometimes witnessed where the idiopathic fever has preceded; that is, that between typhoid pneumonia, and the pneumonia of typhus, there is a specific difference; yet to give an accurate and precise description in what such difference consisted, would, as previously observed, be exceedingly difficult. Whatever may be the prime origin of fever, it is pretty certain that the first induced condition has a peculiar tendency to favour the operation of inflammatory action, and when such condition is present, inflammation in one organ or another is readily excited. This susceptibility, as observed, is most probably in a great measure dependent upon the circulatory function having become vitiated, and thus the due balance of the circulation being in some degree lost. During the febrile invasion, in the very commencement of the attack, we find that the whole system is affected before the brain and spinal marrow have given any marked evidence of primary or predominating disorder: the patient experiences a peculiar listless depression; the voluntary muscular system participates in disorder, and the excretions are equally affected; phenomena witnessed in the order febres, but not phlegmasiæ. Thus from these considerations it must be allowed that fever and inflammation are two and distinct diseases, and physicians who disregard these facts, forgetting that fevers have to run their course—that they cannot be abruptly checked in their progress like the phlegmasiæ: that there is, especially in those forms variously termed adynamic, asthenic, and congestive, a greater liability to a state of depression in the natural powers of the body, and that these powers require more care in being husbanded when the state of excitement has passed—that attacks which are apparently similar may on account of certain peculiarities in the constitution of the epidemic demand a different treatment; with many other considerations equally important—those it is reiterated who forget these truths are often led into grave errors—errors whose commission is attended with a fatal issue. The localists and essentialists have both very industriously set forth their reasons, and probably both are too exclusive in their opinions: if, according to the former, we are to account for the phenomena of fever by assigning its seat to one organ, then it follows that a rigid system of antiphlogistic treatment directed towards the brain would be most consistent, according to the views of Clutterbuck and others, and that a similar plan with regard to the stomach ought to infallibly cure the species of fever appellated by Broussais gastro-enterite. Experience, however, every day tends to confirm us in an opposite way of thinking. Were we on the other hand to alone advocate the essential theory, the fact that inflammatory action in a greater or less degree is so common in idiopathic fever, that it would be exceedingly difficult to prove such complication, as being always of an adventitious origin. Did space allow, a multitude of arguments might be adduced, which from a parity of reasoning seem to leave no doubt on the mind that idiopathic fever and simple inflammation are essentially dissimilar; yet it must be confessed that were we compelled to precisely define in what their non-identity consists, that is, determining accurately from the proximate cause, the present state of our knowledge would not afford a definite and unequivocal explanation to this question.

These facts are now briefly mentioned, because, if the inflammatory theory were correct, the liver, which was most frequently affected in the epidemic now treated of, ought to have been the organ towards which the major part of the treatment should have been directed, and when efficiently treated the fever should have decreased in a ratio corresponding to the restoration to health of that organ.

The study of all diseases is much facilitated by reducing their symptoms into distinct orders and generic groups, but when the causes producing such symptoms are vaguely and indefinitely understood, it is quite impossible that any nosological classification can be unerringly founded. Upon a strict examination of certain laws by which both animate and inanimate nature are ordered (when the operations are perfectly understood), we find that certain causes are always attended by certain results, and that certain results can only be produced by certain causes; for instance, we know that precise volumes of certain gases, when blended, produce water, and from the produced quantity of water the exact volumes of the employed gases can be abstracted; that a given degree of heat will produce a state of expansibility in a given body, precisely commensurate with the degree of intensity of such heat; and this experiment might be repeated *ad infinitum*, if the body subjected to such process in its physical properties remained in a perfectly unaltered condition. Hence, as we are ignorant of the exact causes of fever, so do their effects and phenomena appear a tissue of doubt and perplexity; and while the remote and proximate causes are invested with so much mystery, so will the systems and classifications be in a great measure founded upon mere arbitrary distinctions. The great and grand discovery, then, to be made with regard to febrile disease, is manifestly a more correct knowledge respecting those primary conditions which produce their correspondent effects, and not so much with regard to the effect themselves.

There is, in the general features of continued fever, a sameness of character, when viewed as a whole, which might in a cursory manner almost lead us to infer that all its modifications and types originated in and depended upon one common cause. All forms of the disease present grand characteristics, which seem manifestly to possess an identity of nature, and which might appear, from what has been said above, to argue powerfully in favour of the oneness of the cause by which they were produced; and the unity of origin of even all classes and species of fever has been contended for by many writers and some very able authors. But the common cause may be so essentially modified by unintelligible conditions, as to produce those variations in its character which are so frequently noticed; indeed so much so as might with propriety be termed positively different, for we see their effects are different, though still retaining a grand feature of sameness, on account of which nosologists have arranged them under one order. The opinion that all denominations of fever depend upon one cause, including even the exanthemata, intermittents, and remittents, is contended for by Southwood Smith, and others; and Bateman upholds the doctrine of unity of the cause of fever, when he says,—"All the attention which I have been enabled to give during the last fifteen years, to the passing phenomena of fever, and more especially the observations which I have made while several hundred cases have been presented to my view within the compass of a few months, have tended more and more to impress me with the conviction of the identity of that disease under all its classifications *." This opinion of Smith, Bateman, and others, I shall endeavour by the adduction of facts in the sequel to disprove.

A minute and authentic record of symptoms during any real febrile visitation is most desirable, and it was this mode of studying disease which gave to Hippocrates a distinguishing superiority over his contemporaneous practitioners of the healing art; for instead of seeking to give some far-fetched hypothesis, he rather contented himself with a correct delineation of nature; the only method in medicine calculated to ensure valuable results. In the establishment of any new theory, nay, in that of an isolated fact in any branch of science, much labour in the examination of all such considerations

* Bateman "On Contagious Fever," p. 22.

as might militate against the commonly received opinions, is absolutely requisite, and the accumulation of facts and irrefragable data are quite indispensable; holding such in view, and finding that the fever now treated of presented unusual features, definite and substantial truths seemed highly indicated, and careful and attentive observance of its phenomena, from personal inspection, could alone lead to correct conclusions. "In writing the history of diseases," says Sydenham, "every philosophical hypothesis which hath prepossessed the writer in its favour ought to be totally laid aside, and then the manifest and natural phenomena of diseases, however minute, must be noted with the utmost accuracy; imitating, in this, the great exactness of painters, who, in their pictures, copy the smallest spots and models in the originals *."

From observations founded on many hundreds of cases, the following considerations appeared as the most predominant features of the disease, and such as distinguished it from other forms of continued fever hitherto recorded; these are arranged under the subjoined heads:—

I. The invasion was very often unusually sudden, when compared with the ordinary mode of accession of the common forms of continued fever as witnessed in this country.

II. The rose-coloured measly eruption of genuine typhus was invariably absent. Petechiæ were observed of a dark purplish livid hue, never elevated, but clearly circumscribed.

III. There was generally absence of the injected ferretty looking eye.

IV. The disease almost always resolved itself by a well-marked and copious diaphoresis, this taking place most generally upon the seventh, but varying from the fourth to the ninth day from the invasion.

V. The head symptoms were comparatively slight, and less severe than are commonly observed in typhus; the brain and its membranes were not so often found the seat of lesion.

VI. A very great majority of the cases had pain and tenderness over the hypochondriac and epigastric regions, and sickness and vomiting were almost constant symptoms at the commencement of the disease.

VII. There were an unusual number of jaundiced or "yellow cases," and with these were often associated a dark coffee-grounds looking (and in some instances black) vomit.

VIII. There was almost universally a recurrence of the primary symptoms during the patients' convalescence, and such relapse sometimes took place to the third or even fourth time.

IX. The pulse might be extremely high, without causing any alarm as to the result of the case.

X. The tongue was generally covered (except at apex and edges) with a thick pasty dirtyish yellow white-looking coat, mostly moist, at least seldom so dry as we frequently observe it in genuine typhus.

XI. Pregnant women at all periods of gestation invariably aborted.

XII. The kidneys were often the seat of diseased action, and in some instances death appeared to be induced by the absorption of urea, which was discovered in the serum infiltrated into the ventricles of the brain, and this product was also found in the blood both during life and after death.

XIII. Muscular and arthritic pains were exceedingly common during convalescence.

XIV. A peculiar form of ophthalmitis not unfrequently supervened during convalescence. (See Sequelæ.)

XV. The mortality was very small.

Such appeared in my own humble opinion to be the most distinguishing diagnostic marks of the distemper, and which give to the disease, when viewed as a whole, a peculiarity of character similar to which no epidemic upon record has manifested a positive resemblance.

TABLE No. V.*

This table forms an analytical detail of the chief particulars respecting 80 *cases*; 40 *males, and* 40 *females.*

No. whose ages are under 20 years . . .	20	1 in 4
No. whose ages are above 20 and under 40 .	40	1 in 2
No. whose ages are above 40 and under 60 .	18	1 in 4·44

* Swan's Sydenham. Author's Preface, p. 4.

* Tables No. V. and VI. according to the numeration in the first arrangement, being considered by the editor as too large for the pages of the journal, the above has been compiled, with the intention of giving the matter in a more condensed manner.

No. whose ages are above 60	2	1 in 40
Resided in Cowgate	17	1 in 4·7
Resided in Canongate	14	1 in 5·7
Resided in Grass Market	7	1 in 11·42
Resided in West-Port	7	1 in 11·42
Resided in different Wynds	21	1 in 3·8
Temperate and moderately so	64	1 in 35 or 1 in 1¼
Intemperate	16	1 in 5
Married	40	1 in 2
Unmarried	40	1 in 2
Contagion assigned as cause	28	1 in 2·85
Wet assigned as cause	17	1 in 4·7
Cold assigned as cause	13	1 in 6·15
No cause assigned	22	1 in 3·63
Average of days from seizure to admission	*4·7	

* Of the 40 male cases, the average is 6 3-10th days; and of the females 3 1-10th days.

Average of days from seizure to crisis	6·2	
Number of deaths	4	1 in 20
Mean frequency of pulse at admission	98·1	
No. requiring bleeding at arm	7	1 in 11·42
No. requiring local bleeding by leeches	22	1 in 3·63
No. of relapses	72	1 in 1·11
No. in full employ	26	1 in 3·17
No. in partial employ	34	1 in 2·35
No. out of employ	20	1 in 4
No. of yellow cases	7	1 in 11·42
Complications*		

* Out of the 80 patients 5 had acute pleuritis; 1, acute pneumonia; 1, nephritis; 3, a dysenteric attack; 2, singultus in a severe degree for a week; 1 had delirium tremens; and 1 was during convalesscence removed to the medical wards, and died of Bright's disease.

No. V.

The manner in which the distemper was ushered in, like all forms of continued fever, admitted of some variation, such being induced by certain idiosyncrasies and other circumstances calculated to influence its development. It would have been difficult to have selected a number of cases to which the foregoing heads were unitedly applicable; nay, it might perhaps have been no easy matter to find but a few instances, in which were discoverable every one of the diagnostic distinctions; for as we scarcely at any time, or it might truly be said never, observe two examples of any form of disease exactly similar as regards every particular, so do we not notice positive resemblances in a number of patients even in an epidemic distemper, although the disorder, as is allowed, proceed from some common cause, and each individual case originate in and depend upon the same cause. Whatever part in the interminable field of nature we may chance to scrutinize, variety to infinitude is every way manifest. Throughout the animal and vegetable kingdoms we could not find two examples, in these grand divisions of nature, where positive and precise similarity of structure existed: it is true that two animals or two plants might so nearly resemble each other as to render it a matter of great difficulty, and positively of impossibility, to decide in what they were not identical; yet were our senses sufficiently acute to enable us to detect those differences, we should at once be convinced of the truism; so it is with regard to those diseases which afflict the body. Diseases immediately proceed from the anormal actions of certain organs which are necessary to health and life, and those actions are always in an exact ratio to the states producing them, and as those states in all cases vary thus are the phenomena of disease never exactly alike. The same external circumstances will not produce in a number of individuals the same effects; peculiarities of temperament, constitution, and habits of life, for instance, often, in a very marked manner, not only modify febrile affections, but other classes of disease: often we may notice during the time of an epidemic attack that two individuals may be placed in the same locality, where the extrinsic influences are of one character, in nature and degree of intensity — the poison producing the disorder in the one giving rise to the same disease in the other, yet one of the two may go through the attack in a comparatively mild way, whilst the other, in despite of every precaution and care, will unavoidably perish.

The initiatory symptoms of the disorder, when regarded in a general point of view, evinced a great similarity; a sensation of coldness, rigors, headache, often frontal and sometimes merely supra-orbital; lassitude; pains over the lumbar region, and in the limbs, the affection in the latter parts being described by the patient as a dull numbness; nausea; vomiting; loss of appetite; a heavy listless expression of the eye, and in the countenance was portrayed an obvious delineation of corporal suffering. The shivering was at various periods of intervention succeeded by flushings, heat of skin, much thirst, slight or sometimes copious perspirations; the latter symptom seldom in any great degree relieving the pains of which the patient had previously complained. Sometimes the diaphoresis was incomplete during the invading stage, being then but partial, and only becoming general throughout the surface at the crisis. These local sweats were mostly manifest in the forehead, neck, chest, and at the flexures of the extremities. In those persons in whom was noticed a dry skin from the commencement to the crisis, the critical perspiration was then often very copious. The urine was decreased in quantity, and high coloured; the vomiting would not unfrequently be persistent for three or four days subsequent to the accession; the bowels were generally more or less confined; the pulse was full, quick, and somewhat incompressible. The patient seemed anxious and restless, would toss about in bed, and give utterance to his suffering in piteous

moans, as if labouring under great bodily affliction. Upon inquiry after their arrival at the hospital, they generally stated that they had slept badly since the time of seizure, and that they had passed watchful nights without getting any sound or refreshing sleep. Such is a brief outline of the manner in which the disorder set in; the symptoms above noticed will, however, be more fully particularised, as they are in due order arrived at in the description of the distemper now submitted to the reader.

Dr. Cormack, in his work published on the subject of these papers, has noticed, and apparently with no ordinary degree of importance, a remarkable feature in the fever which was either over-looked or disregarded by most of the other physicians and writers, who witnessed the affection; viz. "a bronzing, leadening, and purpling of the countenance before and after seizure." "In ordinary cases," says the same author, "the countenance of the patient has a peculiar appearance, which we may designate bronzed, for the want of a better term. Though no words can accurately convey what is thus attempted to be described, the appearance itself is very characteristic, and has never failed to arrest and interest the medical visitors to the hospital to whom it has been pointed out."* That such statement is exceedingly equivocal most of those who had sufficient opportunities of judging of the real nature of the epidemic must readily allow, and several with whom I conversed on this point, and whose opinions were entitled to the highest respect, dissented most essentially from the statements advanced by that author. Again, Dr. Cormack says, that in the autumn the facial bronzing was most common, and that by the time when he published his book (Dec. 1843), it had in a great measure vanished. Those gentlemen who were daily in the habit of seeing patients in every stage of the disease, from the very onset of the attack to its termination, must admit that in its manifest appearance little or no variation was discernible; indeed, as previously asserted, the evenness of the distemper in its general characteristics, throughout its duration, formed one of the many peculiarities which it presented, nor did it alter in severity, or in any essential properties, from the beginning to the close,—a circumstance unusual in former, and great epidemics, as the old writers generally notice that the attacks which they have recorded seemed to expend their greatest fury at the first, and, as they proceeded, their degree of malignancy often became so much diminished as to change the general features of the distemper. In the generality of febrile attacks occurring in cities and large towns, where the poorest and most destitute set of individuals are the first to become affected, and who, on account of their poverty and deprivations, are mostly a pallid, relaxed, and unhealthy class of individuals, with whom pectoral complaints are exceedingly common,—we may readily conceive that when a fever breaks out amid such persons, lividity and congestion in the features from pulmonic obstruction might be, and is, of very frequent occurrence; and it was this appearance, I apprehend, which Dr. Cormack regarded as a specific indication of the disease, and not, as it ought to have been considered, a mere adventitious condition, induced by the operation of obvious and acknowledged causes. Upon reference to the statistical tables it will be seen that a very great majority of the patients admitted into the hospitals were from the most impure and unhealthy localities in the city, where the miserable creatures who people those densely populated and noisome parts are many of them half-starved and half-clad, and with whom the different forms of bronchitis, phthisis, &c. are but too common; it is reiterated that we may easily imagine how a febrile affection will be more or less complicated with pulmonic congestion; and thus may be accounted for the appearance in question. Dr. Cormack, wishing to substantiate his opinion respecting the symptom now spoken of, quotes from Blanc, who writes of the yellow-fever as follows:—"There is something very peculiar in the countenances of those who are seized with the disease, discernible from the beginning by those who are accustomed to see it. This consists

* Cormack on the Fever, page 3.

in a yellow or dingy flushing of the features, particularly about the parotid glands, where the yellow colour of the skin is first perceived."* Had such been of so frequent occurrence in the late epidemic, as we are led to infer, it appears somewhat strange that the physicians in Glasgow, Dundee, Paisley, and other places, some of whom gave accounts of the disorder, should have silently passed over this novel feature, and, so far as my own experience warrants an opinion, I have little hesitation in saying that the assertion is exceedingly doubtful.

The pathology will now be treated of, according to the numeration of its division as above.

I.—*The invasion was often unusually sudden, when compared with the ordinary mode of accession of the common forms of continued fever, as witnessed in this country.*

The manner in which typhus commences is often insidiously, and the patient not unfrequently tells us that for some weeks he has felt slightly indisposed; at least, he generally says, that for several days he has experienced a degree of languor and lassitude, some degree of head-ache, loss of appetite, with more or less disinclination for exertion. In the seven days' fever, however, the sudden manner in which the initiatory symptoms set in convinced the physicians at an early period of its peculiarity as to this particular. Often, patients upon being interrogated would state that after they had gone to bed in usual health and spirits, they were on the following morning seized suddenly with a fit of shivering, pains in the limbs, nausea, headache, &c. which obviously determined the exact time on which the disease began,—a circumstance seldom so very markedly noticed in typhus. Dr. Christison, in his article on Continued Fever, in Tweedie's Library of Practical Medicine, when speaking of fevers generally, observes:—"The appetite is occasionally at first not affected; the strength is at all times so little reduced that a man has been in the incipient stage known to walk forty-five miles within so many hours." In the seven days' fever the symptoms hurried on with much greater rapidity; indeed, so much so, that patients would often present themselves at the hospital on the second and sometimes on the first day; and we see upon reference to Table No. V. that the average number of days from seizure to admission was not more than 4·7 days; in Table No. VII. 4·5 days; and the average would most assuredly have been much less if the patients could have invariably been admitted at the time of their first application; but, as before stated, the unwonted pressure of applicants beseeching admission was so great, and every bed so rapidly filled, that innumerable individuals had to wait for some days before it was possible to receive them into the institutions—if they were not unable to get in altogether. Dr. Welsh, in his work on the fever which raged six or seven and twenty years ago, thus writes with regard to the pathognomonic considerations now discussed. "Frequently the persons continue at their employment for some days, with languor, lassitude, aversion to motion, and loss of appetite; there are transient slight chills and flushings, after which they are attacked with decided rigors, pain in the back, and other symptoms of fever; more generally, however, the attack is sudden, the patient feeling previously no unusual sensation; sometimes, when at work, or when getting out of bed, to which they had gone in perfect health on the previous evening, or in short, after any unusual operation, they find themselves attacked with severe rigors, head-ache, pain in the back, nausea, and sometimes vomiting or diarrhœa."* This description accords well with the accounts given by patients of the mode in which their disorder was ushered in during the epidemic of 1843-4; and the suddenness of the attack in this distemper was perhaps more decided than in the fever recorded by Dr. Welsh. Well-marked rigors were seldom absent during the stage of invasion; and patients would say that they felt as if something cold were trickling down the back. The numbers that were affected with certain symptoms, as given in the tabular forms, well show the sameness of character which the disease maintained throughout its course. In Table No. VI. as under

* Blane on the Diseases of Seamen.

* Welsh on Blood-letting in Fever, page 16.

TABLE VI.—*Giving particulars respecting 450 cases of fever that were in the hospitals in January*, 1844.

Males	210	1 in	2·14
Females	240	1 in	1·87
Under 20 years	130	1 in	3·46
From 20 to 40 years	217	1 in	2·07
From 40 to 60 years	85	1 in	5·29
60 years, and upwards	18	1 in	25
Married	214	1 in	2·1
Unmarried	236	I in	1.9
No. labouring under epidemic	426	1 in	1·034
Yellow cases	28	1 in	16·07
Affected with head-ache and pains in head	350	1 in	1·28
or 1 in 1¼, or about 4 out of 5.			
Affected with pain in chest	148	1 in	3·04
Affected with pain in abdomen	75	1 in	6
Nausea or vomiting (with more or less of tenderness at epigastrium)	273	1 in	1·65
or about 10 out of 16.			
Muscular and arthritic pains, especially during convalescence	375	1 in	1·2
or 5 cases out of 6.			
Hypochondriac pain, or tenderness on left side	74	1 in	6·08
Hypochondriac pain, or tenderness on right side	39	1 in	11·53
or 1 in 11½.			
Hypochondriac pain, or tenderness on both sides simultaneously	40	1 in	11·25
or one in 11¼.			
Diarrhœa or dysentery	72	1 in	6·25
or one in 6¼.			
General blood-letting	19	1 in	23.7
Cupped	6	1 in	75
Leeches applied to head	68	1 in	6·62
or one in 6½.			
Leeches applied to chest	23	1 in	19·56
or 1 in 19½.			
Leeches applied to abdomen	16	1 in	28·12
Epigastric pain or tenderness	160	1 in	2·81
or 1 in 2¾.			
Cough during attack, requiring more or less remedial measures	55	1 in	8·18
1 Relapse	231	1 in	1·95
or 10 cases out of 19½.			
2 Relapses	14	1 in	32·14
3 Relapses	2	1 in	225
4 Relapses*	0		0
Total of relapses	247	1 in	1·82
or about 5 out of 9 that relapsed before leaving the institutions.			
Required Wine	123	1 in	3·65
or 1 in 3½, or 2 cases out of 7.			
Required spirits	26	1 in	12·
or one in 12.			
Ordinary Typhus*	24	1 in	18·75
or 1 in 18⅓.			
Had the genuine rose-red measly eruptions	23	1 in	19·56
or 1 in 19½.			
Relapsed in typhus	0		0

* As patients were generally dismissed as soon as possible from the hospital, in order to afford room to other applicants, it not unfrequently happened that they relapsed after going to their own homes, which of course renders the proportion who had a repetition of the disease greater still.

that out of 450 patients, 350, being 1 in 1·28, or 1 in 1¼, or about 4 out of every 5, had headache or pains in the head; of the same number, nausea or vomiting occurred in 273 instances, being 1 in 1·65, or about 10 out of every 16 cases. In Table No. VII., out of 40 cases, 31, being more than 3-4ths, had, during the invasion, aching and pains in the head, and no less than 38, being 9-10ths, had well-marked rigors. In Table VIII. the invading symptoms were as follows;—65 out of 80 cases, or 1 in 1·23, had rigors; 56, or 1 in 1·42, nausea or vomiting; 52, or 1 in 53, arthritic or muscular pains. The celerity of its commencement was well illustrated in the persons of certain parties who resided in the hospitals, and there contracted the disease. Dr. Cameron, who, in the autumn of 1843, was physicians' resident-assistant in the large fever hospital, Surgeons' Square, on the morning of the day on which he began to be ill ate a hearty breakfast, then experiencing no premonitory symptoms; and in an hour or two subsequently was seized with sudden pains in the right arm and shoulder, especially in the biceps muscle†, and from that moment he became rapidly worse; so much so that in the afternoon he was obliged to go to bed. My friend, Mr. John Watt Reid, now Assistant Surgeon in the Vindictive, who was Dr. Cameron's successor, was first warned of his attack by a quick lancinating pain in the right shoulder, whilst seated over the fire in a friend's house, from which moment the disease very speedily progressed. Also, my friend Dr. Wentworth Hende, who

* Out of the twenty-four cases of genuine typhus, it is seen that no less than twenty-three out of that number had the true measly rash.

† Some practitioners who witnessed much of the disease asserted that it was no uncommon thing for a sudden piercing pain to be experienced during invasion, in the deltoid muscle.

was Mr. Reid's sueeessor in the Institution, began equally sudden. In the morning, when at breakfast, I observed nothing at all unusual either in his appearance or spirits; in the evening of the same day he was in bed with his head shaved*. I distinctly remember many instanees during the autumn, espeeially amongst the Irish reapers, who were employed in the Lothians, of individuals who had gone to the harvest-field in the morning to prosecute their occupation, and in wonted health; in the evening they were conveyed to the hospitals, having had the invading symptoms come on so suddenly as to render them ineapable of further exertion. Dr. Cormaek says, he did not find that his patients deseribed their attack as following some "unusual operation," as insisted upon by Dr. Welsh, in the epidemie of which the latter relates. It is said, in a previous paper, that whatever lowers the tone of vital aetion predisposes the body to disease, and renders it mueh more prone to the eontraction of an infeetious disorder; and it is quite reasonable to suppose that the system might absorb a certain quantity of poisonous effluvia, whieh during a state of quietude of the body might latently lay innoeuous; yet if some exhausting or debilitating cause eome into operation, and thus the repellent power of high and vital action be lowered, the absorbed noxious agent being now enabled to overcome the salutary repulsive efforts on the part of nature, sueh might spring into progressive existenee, and thus a disease be lighted up in the system, that might, aeeording to its particular nature, uninterruptedly proeeed through its course. It is a commonly reeeived opinion that there is the most risk in coming within the range of an infeetious effluvia, when a person feels languid and depressed, and medical practitioners, when practicable, endeavour, wisely, to avoid exposing themselves to such, if labouring under those states. My friend, Dr. Fleming, left the hospital on leave of absence, and went to the eountry in perfect health. On the seeond day after his departure he had a very long walk, after which he was mueh fatigued. The next morning the unequivocal symptoms of the epidemic fever were manifest, and from that time he quiekly beeame worse, and went through the disorder in its ordinary form. Now in the town where he was taken ill there was not, nor had been, any instance of the seven days' fever; for months previously, however, he had been in daily communication with patients affected with the distemper, and did not commence in the disease, but as soon as ever the system became debilitated the fever was developed. Here, then, is an example, and a very argumentative fact it supplies, favouring the supposition that an unusual operation formed the exciting eause to the disease. Almost all military medical writers notice that long marches are the invariable preludes to diseases, especially those of a febrile character; and troops, when in moderate exercise, in garrison, will be very healthy and tolerably free from fevers; but if they should be exposed to privations, and great physical exertions, those affections will often break out, and sometimes decimate their ranks. Respecting the unwonted suddenness of the fever now described, we can only attribute the cause of such to certain unintelligible properties in the nature of the poisons giving rise to it; it may be to the relative proportions in which the elements entering into the causation of the epidemic were blended;

* It may here be remarked, that the above-mentioned facts (of three persons quickly taking the distemper), powerfully favour the opinion that the fever was of a highly contagious nature. Each of these gentlemen, who were successively attacked, had, previous to their taking the affection, resided in different and distant parts in the new town, where the epidemic prevailed in a very limited degree, and scarcely at all in the squares and respectable streets; yet we see, as soon as they became exposed to infectious influence, they each readily took the distemper. Other two gentlemen, who, after the former, discharged the duties of that establishment, also contracted the disorder, and the whole of the five spoken of caught the complaint within as many months. Their becoming affected could hardly be attributed to malaria, because this hospital had been newly fitted up for the reception of fever patients, with a view to keep them distinct from the Royal Infirmary and the surgical department; a general reparation had for some time been carried on in the interior; the newest and most approved contrivance for an efficient ventilation constructed, by which an ample perflation of air could readily be directed through each apartment, and every precaution as to cleanliness, and similar considerations, had been strictly attended to before any case was admitted. Besides, if malaria had been the cause, it is fair to presume that some of the work-people, who had been long employed in the alterations, would have contracted this particular fever, which was not the case. From these, previous, and many other facts that might be advanced, the only legitimate inference to be arrived at is, that the distemper was of a highly contagious nature.

to the predominance of some powerful agent or the like, which is more probable than that such was owing to personal peculiarities, because the characteristic was exceedingly common, being the rule and not the exception. Had it occurred merely in a few isolated cases, we should have rather felt inclined to attribute it to certain states within the body, which were highly calculated to further its development, instead of assigning it to the common cause—to specific influences in the prime causation. A physician, who saw much of the distemper, when adverting to the point now discussed, observes:—"From what I have seen and heard of the manner of the invasion of typhus fever in various epidemics, I regard the sudden and violent invasion of the present form as characteristically different from the way in which that disease sets in."

II.—*The rose-coloured measly eruption of genuine typhus was invariably absent. Petechiæ were observed of a dark, purplish, livid hue, never elevated, but clearly circumscribed.*

Petechiæ have been alluded to, and sometimes importantly, by most writers upon fever, and perhaps the older authors laid more stress upon this pathognomonic appearance than more recent authorities, because they were generally the accompaniments of very grave types of the disease: hence it is fair to suppose that their description would hold a pretty prominent part in the treatises upon epidemic and pestilential visitations. Pure exanthematic eruptions have from the remotest times of medicine been considered as the manifest results on the part of nature, which it effects in throwing off from the body the deleterious matters which it may have imbibed; and some physicians have imagined, and plausibly, that the measly efflorescence in typhus is a diagnostic mark constituting a chain of connection between continued fever and the exanthemata. It is quite an arbitrary distinction that divides the latter from the former, and if regarded in an abstract point of view, there is less positive difference in the real nature of the two orders of disease than nosologists would seem to infer. In the fevers occurring in some of the large towns in Scotland and Ireland, and in London, this (the measly) form of eruption is far more common than in the English provincial districts; generally speaking, with the exception of the metropolis and some of the cities and large towns in this division of the empire, eruptions in true cases of continued fever are by no means common, certainly very much less so than in the places above mentioned.* When eruptions occur at a late period in typhus, such circumstances are accounted as by no means favourable conditions; and if they should not become manifest sooner than the tenth or twelfth day, such instances very often pass on to a mortal termination. Petechiæ are most frequently noticed in those fevers which assume much debility and prostration; and vibices, hæmorrhagic discharges, &c., are generally the concomitants of fevers the mortalities of which run high. Petechial spots, and the measly eruption of genuine typhus, are not only dissimilar in their ostensible characters, but appear to be produced by opposite morbid processes; and the following inferences may seem legitimate deductions as to their production. If the hand is drawn over the elliptical rose-coloured eruption of typhus, an irregular surface is felt as if from ill-defined papillar eminences; these upon slight pressure being made by the finger momentarily become pale and indistinct; upon the stress being removed they quickly recover their wonted pinkish-red appearance, and in the course of time the cuticle by which they are covered is desquamated. The livid hemorrhagic petechiæ are not elevated, but clearly circumscribed, cannot be obliterated by pressure, and the superjacent cuticle does not peel off. The former seems to be produced by anormal high vascular action, and are immediately caused by the rupture of the arterial capillaries, and not by the venous extremities, because we see that pressure readily empties them of their contents, and that when such pressure is suspended they quickly become refilled with bright arterial blood; therefore their circulation is not wholly arrested, but merely retarded in its course; and their elevation is most

* In this part of the country I never witnessed a single instance of the true elliptical rose-red eruption of typhus, and upon inquiring of other practitioners, they also bear testimony of its rarity.

probably owing to the following conditions:—

1st.—To the increased calibre of the vascular extremities which transmit coloured particles.

2ndly.—To those minute ramifications which in a state of health give passage to a colourless fluid, becoming permeable to the red blood globules; this change being partly effected by an increase of power in the vis-a-tergo.

3rdly.—To the exudation, in a greater or less degree, of arterial fluid into the surrounding cellular tissue, which from the greater impetus of the blood might not be allowed to coagulate; and the desquamation of the cuticle is undoubtedly owing to local pressure, which may either destroy its integrity, or so disorganise it as to render its excoriation an unavoidable consequence. The latter kind may have their origin from a different operation of causes; chiefly by the want of tonic power in the venous extremities, which becoming congested from retardation in the circulation of these parts, their calibres become enlarged, the power of propulsion destroyed, and rupture into the surrounding filamentous textures the result, when the effused blood there coagulates, and remains until the absorbents carry it off, because these spots in their colour and external character differ from the former, because pressure cannot disperse their contents, evidently showing that circulation is suspended, because they are clearly defined, and because they are mostly associated with asthenia. The cuticle is not thrown off, on account of its not having been subjected to subjacent pressure. We know that the function of circulation is immediately under the influence of the function of the nervous system—that the former is quite dependent upon the latter; and this holds good from the radical commencement of the arterial tree to its ultimate extremities, and between the minutest fibrillæ of nervous matter and the adjacent capillaries there is a positive relation: hence, if the great nervous centres become affected, which is the case eminently in fever, such affection is transmitted to the most distant parts: thus, in the adynamic, or, in the language of those "physicians who still linger round the ruins of the Brunonian school," the asthenic form, it follows that the fibrillæ of nerves which go to supply with nervous energy, the vascular extremities becoming affected, the vessels then being deprived of their natural nervous stimulus, their contractile power is deteriorated, and inordinate distension, rupture, and effusion into the surrounding cellular tissue, in a consecutive order, succeed; thus, from these premises it is plausible to conclude, that in fevers where much prostration and want of power exist, in such kinds of attack, petechiæ, vibices, hemorrhages, &c., are very probable sequences. According to Haller, the venous circulation may become so slow that coagulation may actually occur in the living body, without any extravasation; we may conceive, then, how readily the venous blood will coagulate when any conditions place it apart from the circulatory power. The conclusions arrived at by Stephens, Clanny, and others, were that the blood during fever became deprived of much of its fibrine, and we well know that in many malignant cases of typhus, the blood found in the cavities of the heart and in the large vessels is a dark thin fluid gore, instead of being as normally of a caky formative consistence; hence the blood being robbed of its lentor becomes far more liable to be transuded by the capillaries, and thus may we in some measure account for those passive hemorrhages which occasionally take place on the mucous surface of the alimentary canal, in the hepatic capillaries of the vena portæ, and into the various cavities of the body as well as in the cutaneous tissue.* Huxman, when speaking of petechiæ, makes the following correct observations:—"When black, livid, dun, or greenish spots appear, no one doubts their malignity; the more florid, however, the spots are, the less is it to be feared; it is a good sign when the black or violet petechiæ become of a brighter colour. The large black or livid spots are almost always attended with profuse hemorrhages."† In some epidemics upon record the petechiæ were not confined to the skin alone, but also distinctly discernible upon the serous membranes covering the viscera, and those who have had opportunities of examining the bodies of patients

* Tweedie, Copland, Armstrong, &c.
† Huxman on Fever, chap. iii.

who have died of variola, will undoubtedly have seen instances where the eruption was manifest upon some of the internal surfaces. *

The eruption noticed in genuine typhus has, and deservedly, been accounted as one of the most infallible diagnostics of that disease, although it may, as we are well aware, be absent, and the true affection be present; that is, in those localities wherein those epidemics in which the eruptive form of the disease prevails. The physicians in the Edinburgh hospitals, at an early period in the summer of 1843, paid particular attention to the kind of spots that were noticed on the bodies of the patients labouring under the epidemic, and they sought, if possible, to find a case in which were united the seven days' fever, with the true typhoid rash, but in no individual could such be discovered. From the careful examination of at least twelve hundred cases, made by myself, in no single instance could the measly eruption be discovered in union with the short relapsing fever, nor do I believe that such were ever witnessed conjointly at all; if such had been noticed in a repetition of cases, and demonstrable conviction given that they might occur unitedly, it might then have been plausible to presume that the disorder now described was a mere modification of typhus, and not a new disease; because, as above insisted, the measly rash of typhus is the most indubitable of all other characteristics of that disorder; in fact, almost as much so as any of the other exanthematic eruptions are indicative of their respective affections.

The petechial spots in the seven days' fever bore a very near resemblance to flea-bites, and for such they were for some time taken. They varied from the size of a pin's-head to the section of a small pea; a single night would suffice for their production, and they maintained the purplish livid hue for two or three days, after which they gradually assumed a bright rose-red colour, which by degrees changed into a light fawn yellow, and then imperceptibly became indistinct. Many contending that they were always produced by fleas, in a number of instances, I made a careful examination, by means of a common magnifying lens, and found that no central puncta could be discovered, which was not the case in the spots left by the insects. Dr. Henderson also made some experiments, by which he came to the same conclusion, and from the accounts of the patients as well, no doubt whatever was left as to the nature of their origin; viz. that they were the spontaneous results of the disease. The cuticle on being examined by the lens during the time that they were dark and hæmorrhagic-looking, appeared tense and shining; when the fawn-yellow hue supervened it then became slightly wrinkled, but never desquamated. Dr. Christison informed me, that in 1817-20, the petechiæ, noticed in that epidemic, were precisely similar to those now spoken of. Dr. Arnott, of Dundee, in a paper published on the seven days' fever, says:—"I have only seen one case in which there was a combination of the yellow fever* with the eruption so resembling measles, as frequently observed in typhus†." In an isolated case, like that adduced by the writer, there may have been some source of fallacy, and it is very probable that the eruption in question was not the genuine typhoid rash, but urticaria, to which it bears a close resemblance. Facts deduced from meagre data necessarily endanger the correctness of an opinion, especially in medical science, where so much labour, research, and experiment, are absolutely demanded to fully and unequivocally establish a single fact, and where so much that is doubtful and positively false is mixed up with what we satisfactorily know to be true and acknowledged. Dr. Alison, in an article on the epidemic, states:—"None of these cases running the short course have shown the true febrile eruption resembling measles, although many have shown petechiæ, or purple spots, originating in flea-bites, and extending

* Cases of small-pox have come under my own notice where the mucous membrane of the pillars of the fauces, on the pharynx, along the œsophagus, as well as on the surfaces of other of the internal organs, have been studded with variolous eruptions.—See Andral, Carswell, &c.

* From there being in the Dundee Hospital a very great proportion of jaundiced cases amongst the epidemic patients, the physicians termed it the yellow fever, in contradistinction from the ordinary typhus.

† Cormack's Monthly Journal of Med. Science, 1844.

apparently by little ecchymoses*" As insisted upon above, Dr. Alison seems to have erred in supposing that these spots were wholly attributable to flea-bites; there can be little doubt that the mark left by the insects would be attended with a certain degree of extravasation of blood, and, in some instances, so nearly simulate those spontaneously produced by the disease, as to render it difficult to discriminate between the two; which, however, could only be done by means of a magnifying power. From what has been said respecting the impoverished state of the blood in fever, its proneness to extravasation, and, in asthenic cases, the want of tonic power which there is in the capillary extremities, it may readily be conceived how flea-bites would operate as exciting causes to those little cutaneous effusions; but what has been endeavoured to prove is, that they were mostly the results of the disease, independent of such exciting causes. The neck, chest, superior and inferior extremities, were most frequently affected, and the spots were chiefly observed in the persons of weak and relaxed females, whose muscular system was flabby and resistless, and where a pallid and emaciated appearance was manifest. Dr. Craigie, in the paper which he wrote upon the fever, and published in his Journal, Oct. 1843, notices the condition, now considered, as follows:—"No eruption of spots is observed similar to that observed in genuine typhus. But in a certain proportion of cases an eruption of dark red spots, like those of purpura, was observed on the persons of patients. In some instances those bore so close a resemblance to flea-bites that they were entirely disregarded, or ascribed to this cause. In others, however, they appeared connected with the state of the individual's health. At length it was found impossible to doubt from the frequent occurrence of these purple spots that they were connected with the disease. They were seen in the first attack, and as that declined those spots disappeared. They did not, as far as I am aware, appear in the second stage or relapse. In some instances the rose-red spots of typhus were observed, but these were regarded as instances of a fever quite different*." From the cases which came under my own inspection, the petechiæ now spoken of were by far the most commonly noticed during the first attack, yet they would occasionally be manifest in the relapse: the subjoined case illustrates this fact.

CASE I.—*A usual form of the fever.—Present attack a relapse.—Crisis by diaphoresis on seventh day.—Hypochondriac and epigastric tenderness.—Dark, livid, circumscribed petechiæ.*

Janet Piffers, æt. 41, married, has had eight children; hair and eyes dark; reduced in flesh; countenance pallid, and looks anxious and depressed.

Admitted Nov. 24th.—States that her present attack is the second; that she was convalescent from the former attack, and suddenly relapsed, three days ago (Nov. 21st). Her indisposition was ushered in by shivering, dull and continued pains over lumbar and frontal regions, a sensation of stiffness in the limbs, nausea, anorexia, and great prostration of strength. This, the cold stage, continued for four hours, and was succeeded by flushings, heat of skin, much thirst, and increased headache; also slight sweats, which in some measure relieved the muscular and arthritic pains.

On admission, the skin is hot and dry; complains of aching pains in the superior and inferior extremities, in the small of the back, and forehead. Has great tenderness on slight pressure over the hypochondriac and epigastric regions; eyes not at all suffused, the adnata rather looks blanched, Upon a deep inspiration the thorax normally expands. No cough; breathing easy. Says she feels sick, and has vomited at intervals ever since the commencement of the attack. No pain upon pressure on the middle and inferior regions of the abdomen. Tongue covered with a thick, dirty, whitish-brown looking coat; is clean at apex and edges, these parts being somewhat redder than natural; towards the centre of the organ are two or three deep, longitudinal, and irregular fissures. Posterior part of dorsum more loaded, and of a deeper

* Scottish and North of England Med. Gaz. Oct. 1843.

* Edinburgh Med. and Surgical Journal, Oct. 1843.

colour than the anterior—is generally moist. Sleeps indifferently. Bowels confined. Pulse 98, of tolerable strength.

Habeat Statim Pulv. Jalap. Co. drachmam unam. Mist. Diaphor. ℥viij. Cujus Capiat unciam, q. q. q. horâ*. Bibat potum. vegetab. ad lib.†

25th. — Has vomited during the night, the matter ejected being a dark bilious fluid. Nausea continues. A good deal of headache, which is chiefly referred to the os frontis. Bowels opened three times with powder.

Mist. Cont. Sinapis Epigastrio, app. Abradatur capalitium.

26th.—Feels much the same as yesterday. Some nausea continues. Bowels open. Tongue moist, but foul. Pulse 108, rather compressible. Headache relieved by shaving.

Sp. Communis, ℥ij. in die. Enema Terebinth. injiciatur. Horâ Somni habeat haust. cum Sol. Mur. Morph. gtt. xxv. et Mist. Camph. ℥iss.

27th.—Symptoms much the same as yesterday, with the exception of the sickness, which has in some degree abated. To-day a petechial eruption is observed upon the skin, chiefly upon the chest and extremities. These spots vary, from the size of a pin's head to that of a small pea; they are of a dark, livid, purplish-red colour, not in the least elevated, and clearly circumscribed, greatly resembling in colour the purpura hæmorrhagica. When examined with a common lens, the epidermis covering them is a little shining, and perfectly whole, no puncta or flea-bite being discoverable. They have appeared during the last night, or rather since the visit at yesterday noon. Tongue foul, and moist; bowels opened; slept better; pulse 112, rather weak.

Sp. Communis. Mist. et Haust. Rep.

28th.—Sweat last night. Tongue cleaner, and moist. Says she feels improved; had two small watery stools. Eruptions of a brighter red; the spots are not more numerous than yesterday. Pulse 92, still small and weak.

Sp. Communis, &c. Cont.

30th. — Gradually improves, and gains strength. Complains of no pains, nor has had any return of the vomiting since the crisis. Eruption fading rapidly; the spots are now of a yellowish hue; the cuticle over them is bright and shining, and slightly shrivelled. Tongue nearly clean, and moist. Bowels open. Appetite more natural. Pulse 88, of better strength.

Ordered common diet*. Mist. omit. May have half a pint of porter in the day, instead of the spirits.

Dec. 2d.—Continues to improve.

4th.—Continues to improve, and eruption gone.

7th.—Progresses favourably.

10th.—Convalescent.

Remarks.—In the case of Piffers is afforded a good example of the manner in which the distemper usually sets in. We see that she had shivering, pains over the lumbar region, thirst, anorexia, slight sweats, &c. during the first two or three days; afterwards the skin became hot and dry, pain at the hypochondria and epigastrium; that the tongue was covered with the fur so peculiar to this fever; that there was a good deal of vomiting of a dark bilious fluid, and that she had a crisis by diaphoresis on the seventh day. The true characteristic petechiæ were present, and her convalescence was

* The following are the formulæ of the diaphoretic mixtures prescribed in ordinary fever cases in the Edinburgh hospitals:—

Mist. Diaphor. Antim.

Rec. Aquæ Font. oz. vss.; Sacch. Purif. dr. iss.; Vini Ant. Tart. dr. iij.; Tr. Opii, gtt. xxv. Misce. Dosis oz. j.

Mist. Diaphor. Salin.

Rec. Aquæ Acet. Ammon. oz. ij.; Aquæ Font. oz. iv.; Syrup. Simp. dr. vi. Misce dosis oz. j.

† The annexed are the forms of the drink generally ordered in fever cases, in the above hospitals:—

Potus Acidus Mineralis.

Rec. Aquæ Font. oz. xxxii.; Acidi Sulph. Dil. gtt. lxxx.; Sirup. Simp. oz. j. Misce sit potus acidus mineralis.

Potus Acidus Vegetabilis.

Rec. Aquæ Font. oz. xxx.; Potassæ Super. Tart. scrup. iv.; Syrup. Simp. oz. ij. Misce sit pot. Acid. vegetab.

The various other medicines prescribed in these cases, are according to the prescriptions and formulæ of the Edinburgh Pharmacopœia.

* The fever patients, on admission, were put on the subjoined diet:—

Low Diet.

Breakfast—Bread, 3 oz.—Tea, half a pint.
Dinner—Panado: Bread, 3 oz.; Milk, 2 oz.; Sugar ¼ oz.
Supper—Bread, 3 oz.; Tea, ½ pint.

As under formed the common diet:—

Common Diet.

Breakfast—Bread, 6 oz.; Coffee, ½ pint.
Dinner—Potatoes, 16 oz.; Broth, 1 pint.
Supper—Bread, 6 oz.; Tea, ½ pint.

marked by a very speedy recovery. This woman was under the care of the late Professor Graham, and I well remember that to her case particular attention was paid, in order to ascertain satisfactorily the positive nature of the spots discovered upon her person, and from the woman's own statement, as well as from a strict experimental investigation, no doubt whatever remained as to the cause of their production.

Dr. Henderson, whose great experience in typhus fever renders his opinion highly valuable, places the greatest reliance upon the measly eruption as a diagnostic mark of that disease, and in a paper published by him five or six years ago *, it is stated, that out of 130 cases of typhus that had come under his notice, in 108 were found the genuine rosy eruption, and that six out of the remaining twenty-two were not admitted into the hospital until after the twelfth day of the disease. Dr. Cowan, of Glasgow, from an average of two thousand cases, found that between seventy and eighty per cent. had the eruption—that is, in the fever common to Glasgow. Dr. Cormack comes, and rather sweepingly, to the conclusion that the elliptical spots were observed in epidemic cases, although he is enabled to instance but one individual in whom the appearance was manifest—viz. Mary Wallace, one of the day nurses in the Fever Hospital. This woman I saw and examined during her epidemic attack, but could not certainly have affirmed that the eruption was of the true typhoid character; that it did resemble the measly rash must be allowed, and that it equally looked like urticaria was also evident. A short time, however, indisputably settled the matter, as this woman, in the course of a very few weeks after her convalescence from the epidemic, had a second attack, which was genuine and unequivocal typhus, in which the true rash was noticed: therefore the following quotation from the work already referred to, is exceedingly doubtful, if not absolutely incorrect—viz. "That there is such a thing as persons being occasionally affected with the measly eruption in addition to the usual symptoms of the present fever (meaning the seven days' fever)."

* Edinburgh Med. and Surg. Jour. 1839.

III.—*There was generally absence of the injected ferretty-looking eye.*

An injected condition of the eye in fever is an indication upon which the greatest reliance may be placed, that more or less of cerebral affection exists, especially during the state of excitement; but in a more advanced stage, when we have reason to suppose that serous effusion is going on in the ventricular cavities of the brain, the eye, instead of being red and ramified, is more frequently blanched and pale. Armstrong, when describing the symptoms attendant upon inflammatory action within the head, happily conveys the peculiar appearance of the eye, when he says that "there is a physical brightness with an intellectual dulness." The ferocious expression given to the features, when those organs are in a state of great vascularity, has always been regarded as a sure sign of head complication, that is, if the symptom be persistent; and when we consider the origins of the vessels supplying these organs, and that by the researches of pathological anatomists, by comparing the symptoms before with the morbid appearances after death, in such cases, there is mostly found great injection of all the vessels proper to the encephalic mass, with more or less of febrile effusion, the condition in question becomes a highly important diagnostic distinction. In the seven days' fever, the absence of vascularity in the eye, especially when compared with the true typhoid cases, particularly forced itself upon my attention; and after having witnessed many instances of the epidemic, from this pathognomic characteristic alone, it was almost possible to rightly discriminate between the two; and the absence of delirium and severe head complication which were noticed in the epidemic, tend to confirm the preceding remarks.

IV. *The disease almost always resolved itself by a well-marked and copious diaphoresis; this taking place most generally upon the seventh, but varying from the fourth to the ninth day from the invasion.*

The ancients in their times noticed that fevers, after having reached their acmè, possess a natural tendency to pour forth some critical discharge, by which the body seems to be relieved from the deleterious effects of its contracted noxious agents—a doctrine that is also entertained by the older authors and modern writers; and as this disposition on the part of the system does not become manifest until the disease has arrived at an advanced period in its duration, and after the general disturbance has reached its maximum, when any important change in, or powerful impression made upon, the economy of the body is sure to be attended with marked results, hence it is that physicians have ever regarded the crisis of fever as a weighty consideration amid the phenomena presented. This crisis, or *turn*, as it is vulgarly called, is by no means uniform, either as to the period of its supervention or the manner in which it is characterised; in some epidemics it may be very apparent and of constant occurrence; in others the change to amendment may be exceedingly slow, and by almost imperceptible degrees. Again, in some fevers slight hæmorrhages from one or other of the internal cavities, or a moderate attack of diarrhœa, may mark the period at which the change for amelioration takes place, whilst in others a moderate or copious diaphoresis will form the indication of improvement. Hæmorrhagic discharges, increased action in the bowels, or a general perspiration, are, however, the chief modes by which the change in the system is rendered manifest; and if the natural powers of the body be not too much depressed and exhausted with the evacuation by those means produced, the febrile state then usually undergoes a declension in the degree of its intensity—if an apyrexial condition be not immediately (which is sometimes the case) produced, as in an intermittent—and the disease vanishes with greater or less celerity. Sometimes an immoderate diarrhœa, or a very powerful sweat, may come on, or a copious hæmorrhage from one or other of the outlets of the body supervene, which, instead of ushering in the commencement of convalescence, not unfrequently prove to be the unwelcome harbingers of a speedy dissolution. In cases of pure typhus, if the pulse should be very high, a copious diaphoresis may generally be looked upon as an occurrence denoting much danger; again, if the sweat be partial, that danger is more to be apprehended, as a mortal issue is then often at hand. In ordinary typhus the skin becomes moist often by degrees, and the abatement of urgent symptoms gradual, being the effect of a few or sometimes several days; or if the sweat should be profuse, as remarked, the patient not uncommonly sinks. In the seven days' fever, a patient might be labouring under hot skin, a very quick pulse, being sometimes so high as a hundred and fifty or sixty, much headache, pains over the lumbar region, a watchful restlessness, diminished excretions, with an anxious febrile expression of the countenance, and the sweat would quickly become manifest, lasting from two to five or six hours; on the supervention of which a marked difference was suddenly perceptible;—the body would then be bathed in perspiration, the headache and general pains subside, the tongue become more moist, the pulse rapidly fall, the thirst be less urgent; in fine, the general febrile state abruptly and efficiently checked; and after a few refreshing hours of sleep, which were now mostly obtained, the individual would express himself as totally free from any distressing symptoms, and being in all respects comfortable, with the exception, perhaps, of a degree of debility, which, of course, could scarcely fail to be experienced; but the fever was now veritably arrested as far as it was possible for it to be. The following cases may perhaps here, with some aptness, be cited:

CASE II.—*Crisis by a well-marked and copious diaphoresis, on the 7th day: relapses on the 13th day of the disease; resolution again by sweating.*

Christiana Drummond, æt. 17, single, a servant: admitted August 10, 1843.

Complexion light; volume of flesh good. States—Has generally enjoyed good health; had typhus fever seven years ago; with this exception never had any important illness. On the 5th August felt unwell; had a fit of shivering, which was succeeded by alternate flushings and general sense of chilliness, with pain in the head, and aching in the superior and inferior extremities and over lumbar region.

On admission (5th day of fever) complains of headache; pains in the back and limbs; some tenderness over hypochondria and epigastrium on moderate pressure; has some nausea, but no vomiting; appetite not greatly impaired; much thirst; skin feels hot and burning; respiration performed without any uneasiness, and thorax fully expands. No cough; no expectoration; urine scanty and high coloured; tongue covered with a dirtyish-yellow coat, but moist and clean at apex and edges: pulse 126, full, and of good strength.

Habeat Mist. Diaphoreticæ, ℥j. 4ta q. q. horâ.

August 12th.—Feels much easier to-day; had a copious sweat early this morning; complains of no pain whatever, but says she feels weak; skin cool; countenance not so feverish; tongue moist; pulse 80.

Mist. repetatur.

August 13th.—No pain; continues to improve; skin moist; tongue cleaner; pulse nearly natural, and bowels open.

14th.—Continues to improve.

16th.—To-day feels much the same as yesterday.

18th.—Does not feel so well as she did yesterday; complains of some muscular and articular pains; bowels not moved since last visit; has slight headache, and face seems a little flushed; pulse 112; tongue rather dry and glossy in the centre.

Pulv. Jalap Co. statim sumendis, gr. j.
Mist. Diaphoret. Cont.

19th.—Finds herself easier, but skin is still dry; tongue rather bright and shining; bowels opened; pulse 112.

Mist. Diaph. Cont.

21st.—Is better to-day; perspired this morning; skin moist and tolerably cool; bowels open; tongue moist and cleaner; pulse 84, of good strength.

22d.—Continues to improve.

24th.—Is much better, and allowed to get up.

Ordered common diet.

27th.—Improves.

31st.—Convalescent.

REMARKS.—In this woman's case, we see that her disorder was ushered in with alternate flushings and rigors, head-ache, pains in the extremities, &c. On the morning of the 7th day a copious sweat at once arrested the progress of the fever; the pulse fell to near its natural standard, the tongue became moist and the skin cool; and on the 13th day she had a relapse, which was characterised by a close repetition of the primary symptoms; at the expiration of three more days, this, the second attack, was in a similar manner, and as effectually, resolved; viz. by diaphoresis.

CASE III.—*Crisis by diaphoresis on the 7th day—relapses on the 14th day: after other two days the disease is again resolved by sweating.*

Ellen Main, æt. 40, married, had no family: admitted August 14th, 1843; hair and eyes dark; countenance pretty natural, not at all emaciated.

On being interrogated, states: is a native of Paisley; for the last few years has been residing in Glasgow, from whence she came to Edinburgh three days ago. The locality where she lived in Glasgow was one of the most crowded and ill-ventilated parts of the city, where the epidemic was exceedingly prevalent. Her husband has been for many months out of employ, and she has consequently lived upon a very poor and insufficient diet. On the 8th August, after exposure to wet, felt unwell, and had a rigor, which was followed with flushings, pains in the head, small of the back, and limbs; had some nausea and inclination to vomit.

On admission (6th day of fever), complains of headache, dull pains in the back and superior and inferior extremities. No nausea; voice good; intellect unaltered. Sleeps badly, and

is suddenly awakened by startling and terrific dreams. Has no appetite for food; much thirst; skin feels hot and dry; tongue loaded and parched in centre, but moist at edges; bowels confined; urine rather scanty and high coloured. Some degree of tenderness is felt upon pressure over the epigastric and hypochondriac regions: has no other pain. Pulse 108, of pretty good strength.

Habeat statim Pulv. Jalap. co. drachmam, Mist. Salin, ℥viij. cujus unciam capiat, 4ta q. q. horâ.

Aug. 15th.—Had a copious sweat early this morning, (being 7th day); all sense of pain and headache gone; has slept for several hours since sweat; bowels not opened since yesterday; tongue foul; pulse 84, and rather weak.

Sumend. Pil. Col. co. duas statim. Mist. Diaphoret omittatur. Bibat cerevisiam ad Oj. quotidie.

Aug. 16th.—Skin moist and cool; tongue rather cleaner; pulse 80, still weak; bowels open.

Habeat Vin. Rub. ℥iij. Cerevisia contr.

17th.—Feels better to-day.

Vin. Rub. et Cerevisia contr.

18th.—Continues to improve.

To have common diet.

19th.—Continues to improve.

22d.—Has had a relapse, which was ushered in by rigors, headache, pain in the extremities and over the loins; skin feels hot to the touch, and is harsh beneath the fingers; tongue rather dry; bowels confined; pulse 120.

To have low diet. Capiat statim Pil. Col. co. duas, et habeat Mist. Salin. Omnia alia omittantur.

23d.—Much the same to-day; skin still hot and dry; bowels confined.

Pil. et Mist. repetantur.

24th.—Sweats to-day; feels much easier; bowels open; tongue moist, and pulse nearly natural.

25th.—States that she feels much better; bowels moved; tongue moist and not so foul; pains gone; slept well; pulse 84, but weak.

Mist. omittatur. Habeat Vin. Rub. ℥iv. omni die.

27th.—Continues to improve.

30th.—Complains of no pain, but is rather weak; symptoms generally favourable.

2d.—Improves.

5th.—Convalescent.

Remarks.—In the instance of Main it is stated that the initiatory symptoms of the distemper were of the ordinary character; that she had the critical sweat on the seventh, and relapsed on the fourteenth day, and that after other two days the disease again effected its resolution by sweating. After the crisis, the head became free from pain, the pulse reduced in frequency, and some hours of tranquil sleep immediately followed. During the six days subsequent to the first crisis the apyrexial state was complete, the patient steadily improved, the tongue becoming cleaner, the bowels more natural, the skin being cool, the appetite being better, with other symptoms of amendment that were presented, until rigors, pain in the head, feverishness, a high pulse, &c. quickly induced the second attack.

A multitude of instances might have been given to show how regularly the crisis came on about the times above mentioned; so much so, indeed, that the critical period could almost with certainty be prognosticated, and this, it might with correctness be said, was universally by sweating. In genuine typhus the crisis does not take place until a much later period; on the seventeenth, twentieth, twenty-first, and even later still, we not unfrequently observe that symptoms of amendment are first manifest. In typhus it is after the fifth or sixth day before the patient seeks admittance at the hospital, while in the fever now described, by the fifth or seventh day a great majority of the cases had reached their greatest degree of intensity, and those fatal cases which did occur, were, with but very few exceptions, never later than the seventh day, a circumstance scarcely, if ever, witnessed in typhus. It was the remark of the late Professor Gregory, that during the whole course of a long and extensive practice, in no single instance did he remember a case of typhus terminating fatally during the first week. Here, then, we have an indisputable difference, powerfully arguing that the two forms of fever were essentially dissimilar.

On the appearance of the critical

sweat, the increased temperature of the body fell in a ratio corresponding with the declension of other morbid symptoms; from being 106° or 107°, the short space of three or four hours would suffice to reduce it to its natural standard. In typhus we never find such reduction of temperature effected with this unwonted celerity, and as before asserted the excretion is scarcely ever so copious, or where it is, death almost always follows. Instances of pure typhus have come under my own observation, when, perhaps about the fourteenth or fifteenth day of the disease, a profuse sweat has occurred; and what has been the sequel? Not the tranquil and refreshing sleep, the immediate cessation of pain, and the total arrest of the whole train of febrile phenomena, as incident upon such an occurrence in the epidemic, but a state of great prostration, pallor of the countenance, a weak and compressible pulse, and a general indication of sinking was mostly manifested, instead of the ameliorated condition so common to the seven days' fever. A case very recently came under my notice fully verifying what is here set forth. A young woman, of hitherto good health, nineteen years of age, had contracted a fatal description of typhus, and I first saw her on the twelfth day of her fever. When attacked she was in servitude, and more than twenty miles from her own home. She had been bled by a practitioner in the town where she was resident at the time of the accession of the disease, but no intimation was given, either to herself or friends, that her affection was of the febrile kind. She was carefully conveyed home on the sixth day of the disorder, and a practitioner in her own neighbourhood was called in upon her arrival. She could now, though not without great fatigue, walk about the house, nor did she complain of any particular pain, but expressed herself as feeling excessively weak: this gentleman did not consider her case to be one of typhus, but merely some general disturbance incident upon slight cold, and obstructed catamenia. On my first visit, which was late in the night of the twelfth day, she complained of some degree of pain, on taking a full inspiration, in the right hypochondrium. It was stated that since her return home she had not been confined to bed, having been enabled to sit up in an easy chair over the fire, in the ordinary day-room of the house; and that, as before stated, she only complained of general debility and a sensation of sinking, with a powerless and enfeebled condition of the legs, and it was said there had been for the previous day or two unusual quickness of breathing The physician now attendant upon her recommended bleeding for the pain in the side. The pulse, it is true, was quick and of tolerable volume, but there was a peculiar feeling of irritability and want of resistive power to the touch, which, in my own humble opinion, very decidedly contraindicated the use of the lancet; consequently a dissent was urged against the proposed measure. Having made strict inquiries as to the previous history of the case, and from the general appearances manifested, there was no doubt whatever, in my own mind, that her affection, instead of being merely obstructed catamenial discharge, was veritable and undisputed typhus; and that to have had recourse to general blood-letting, would inevitably have ushered in a state of hopeless collapse. She now began to sweat, and was ere long bathed in copious perspiration. Stimulants of wine and ammonia were ordered to be administered pretty frequently, and a sinapism to the affected part on the side applied. Her friends were warned of the perilous nature of her case, and strict injunctions enjoined that the remedies should be regularly given. The next (the 13th day), the flushed and febrile countenance, the suffused eyes and burning skin, had changed to a pallid and sunken expression, and general diminution of heat on the surface; there was a prostrate appearance, when the symptoms were generally viewed, which too truly foretold her precarious condition. The stimulants were continued, but increased in quantity, and given more frequently. On the morning of the fourteenth day I was not much surprised to find that she had become rapidly worse. The eyes were pale and blanched, and sunk in their foramina: congestion in the features, coldness in the extremitics, with a scarcely perceptible pulse, formed the certain preludes to her fast approach-

ing dissolution. She died in an hour from this time.*

The case of this individual forms a good example of what is insisted upon above; viz. of the manner in which we are to apprehend excessive perspiration in typhus, when the disease has advanced, and we see that instead of being, as it was in the seven days' fever, the prelude to an ameliorated condition, it proved but the unwelcome forerunner of a helpless state of prostration, that readily terminated in a mortal issue. There were, it must be allowed, some negative facts connected with the early days of the disease, which might render her case somewhat ambiguous: the tongue was clean and moist; the intellectual faculties had never been at all disordered, and beyond a certain degree of fretful watchfulness, the sensorium was but little disturbed through the whole course of the disorder: there was not much thirst, and, with the exception of the stitch in the side, no local pain was at all complained of; yet, on the contrary, a general review of the case at once manifested positive signs infallibly denoting the febrile state: the pulse was accelerated; the breathing hurried; she had began with rigors; there was impaired appetite, and a debilitated condition of the whole system, indicating that the vital powers were labouring under some great exhaustion and anormal influence, with an indescribable condition of the features, that manifestly shewed the real nature of her complaint.

Dr. Henderson, who has taken notes during the last seven or ten years to ascertain, if possible, certain important considerations relative to febrile diseases, gives his opinion, that a copious sweat in typhus is generally a symptom fraught with the greatest danger; and according to that gentleman's experience, they very seldom recover when such event supervenes, especially if in conjunction with a quick pulse. "The critical discharge, or secretion, of the epidemic fever," says that author, "is a remarkable feature of difference between it and typhus. In a very few instances of typhus I have noticed a favourable change coincide with the occurrence of copious perspiration, but never a total cessation of the febrile state. In the great majority of instances, however, instead of copious perspiration coinciding in typhus with symptoms of amendment, it happens that it ushers in, or accompanies, a state of hopeless prostration, stupor, hurried breathing, and increased frequency of pulse."*

In intermittent fever a powerful sweat acts very differently, and instead of being looked upon in the same manner in which it is regarded in typhus, we view it as the safe and salutary effort on the part of nature which effectually arrests the febrile paroxysm. In that form of fever the sweat cools the body, it lessens the volume of the circulating fluid (for we must remember

* At the time of this paper being sent to the press, another case has come under my notice, fully bearing out the doctrine advanced above.

Mrs. S——, a strong and hitherto healthy-looking woman, of about 40 years of age, and had had six children, was attacked with rigors, pains in the limbs, headache, &c. on the 7th of April last. One of her daughters was now a convalescent after having had a malignant description of typhus. Mrs. S. was treated according to the ordinary principles, and nothing particular occurred in her case until the tenth day, when evident symptoms were manifest denoting a dysenteric complication. The usual remedies relieved this affection, although one or two slight returns came on at intervals for some days. On the eighteenth day of the disease, she appeared to be going on very favourably; the secretions were now more regular, the tongue, which had some days before looked preternaturally red and clean, and indicative of acute disease in the mucous surface of the digestive canal, which Armstrong says then much resembles "a newly dissected muscle," was more natural, and the patient expressed herself as better, and free from pain. The next morning (the nineteenth day of her fever), it was reported that she had had a very copious sweat during the night and early in the morning; indeed, so much so, that the nurse said that she was "bathed in perspiration." At the visit she looked pale and sunken; the pulse was still quick but of tolerable strength. Stimulants were now ordered to be taken pretty freely. During the next two days slight perspirations were noticed, though these were not in any very marked degree. The prostration, despite of the preparations of ammonia, and of the administration of wine and brandy, became greater. She laid in a helpless position in bed; the tongue was dry and dark, the teeth covered with sordes, and head affection had now supervened. Thus did the symptoms continue to become worse, and she gradually sunk on the twenty-third day of the disease.

Some writers are of opinion that if the sweat take place when the skin is warm, and the secretion be not of the cold clammy description, that this circumstance does not portend danger. In my own humble opinion, however, when a powerful diaphoresis does occur at an advanced period in typhus, not mattering whether the surface continue hot, or warm, for a time or not, the very worst results may be dreaded, and more or less of prostration and feeling of sinking are the invariable accompaniments, and not the resolution of the disease, as spoken of in the seven days' fever.

* Edinburgh Medical and Surgical Journal, Jan. 1844.

that this secretion comes immediately from the blood), and thus, by being relieved of their tonic fulness, and the capillary spasmodic action being in a great measure overcome, the circulation is more equable, and the vital organs are freed from the evil effects of an over-supply of blood, which must otherwise produce congestion or inflammatory action; hence from this process of nature more grave and important symptoms are averted. Seeing, as it has been shown, that the copious sweat in the epidemic was almost as sudden, and the consequent apyrexial state nearly as soon complete, as in a case of the pure intermittent type,—that the non-febrile condition continued but for a certain time, and that at the expiration of a few days the primary and identically similar symptoms noticed at the first invasion were again manifest on the return of a succeeding paroxysm, and that these alternations of the febrile and apyrexial state were not unfrequently repeated to the third, and, in some few instances, to the fourth time,—it becomes difficult to dispel the idea that, in these particulars at least, there was a veritable resemblance between it and the fever of the ordinary intermittent type. Allowing this similarity between the two, and, from what is said above respecting the physiological and pathological changes which spontaneously take place in intermittent fever, thus may in some measure be accounted for the beneficial effects induced by the sweat in the epidemic.

In Table No. V., of the eighty cases there mentioned, out of the 40 males, 33 had a well-marked critical sweat, which, in a summary way, arrested the febrile state; two had the crisis upon the 4th day, seven upon the 5th day, eight upon the 6th day, eight upon the 7th, five upon the 8th, two upon the 9th, and one upon the 13th day; this last case, however, which at the first was considered of the epidemic character, ultimately proved to be genuine typhus. Respecting the 40 females, 27 of that number had a diaphoretic crisis on the following days, viz.: five upon the 4th day, five upon the 5th, nine on the 6th, or early on the morning of the 7th, six on the 7th, one upon the 8th, and one upon the 9th day. Thus we see that amongst the males twenty-five had the crisis varying from the 4th to the 7th day, being 5-8ths of the whole number; that twenty-three of these twenty-five had the crisis from the 5th to the 7th day, being more than 4-5ths of this aggregate. Amongst the females, twenty-five out of the twenty-seven had the crisis from the 4th to the 7th day, being nearly 5-6ths of that number. In the general average, then, of these eighty cases, it is seen, that the critical sweat came on at about 6¼ days from the period of accession, or on the 7th day. In the table as under, the average date of the diaphoretic crisis was 6·48, or nearly 6½ days.

Table VII.*

This table gives particulars respecting 40 cases that were admitted into the hospital, from Nov. 17th to Dec. 29th, 1843.

Males	16	1 in 2·5
Females	24	1 in 1·66
Average age of males	29	1 in 1·37
Average age of females	33	1 in 1·21
Occupation :—		
Servants and domestics	26	1 in 1·53
Labourers, operatives, &c.	14	1 in 2·8
Average duration of illness previous to entering the hospital	4·4 days	
Rigors during the invasion	38	1 in 0·5
Temperaments :—		
Nervous	6	1 in 6·66
Bilious	14	1 in 2·8
Sanguineous	2	1 in 20
Nervo-bilious	12	1 in 3·33
Nervo-phlegmatic	2	1 in 20
Bilio-phlegmatic	1	
Nervo-sanguineous	3	1 in 13·3
Head affected in a greater or less degree during the invasion	32	1 in 1·25
Abdominal complication, requiring active remedial measures	5	1 in 8
Average date of crisis by diaphoresis	6·48 or 6½ days	
Yellow cases	4	1 in 10
Number that had one or more relapses before leaving the hospital	35	1 in 1·14
Sequelæ :—		
†Splenitis.	4	1 in 10
Menorrhagia	2	1 in 20
Tumefaction of mammæ	1	

* Two out of the above number had œdema of the inferior extremities to some extent; in one the spleen was exceedingly enlarged, and in another there was suppuration of the parotid gland.

† It might perhaps have been more proper to arrange these four cases of splenitis under the head of complication, but as the organ did not become reduced to its normal size for some time, the affection is thus placed as above.

Unusually severe arthritic pains	1	
Conjunctivitis before leaving the hospital	1	
Bronchitic affection	1	
Rheumatic and arthritic pains during convalescence	23	1 in 1·73
Average duration in the hospital	24¾ days	
Cured	39	1 in 1·02
Died	1	

V. *The head symptoms were comparatively slight, being less severe than are generally observed in typhus; the brain and its membranes were not so often found the seat of lesion.*

The brain and its membranes are frequently affected in, and form a complication very common to, the fever of this country, and there is but little doubt that cephalic affection attendant upon continued fever is more fatal than any other complication of the vital organs; and those cases of the epidemic that went on to a fatal termination, evinced, both by the symptoms during life, and the morbid appearance on inspection, that disease in the brain and its membranes formed the proximate cause of death—that is, in the generality of instances—although unquestionable proofs were given that some died where not the least cephalic affection existed. Dr. Alison, when speaking of the manner in which the fatal issue immediately supervened in the seven days' fever, says that "embarrassment of function and alteration of structure of some organ, *generally the brain*, caused death*." The sensorial functions in continued fever are always more or less disordered, and the intensity of their affection varies according to the mild or malignant character of the disease, the kind of complication, and the idiosyncrasies of the patient: in this respect there was a manifest difference between the epidemic and the form of fever strictly termed typhus. Great delirium, low incoherent muttering, dulness of hearing, imperfection of vision, tremor of the tongue, pricking of the bed-clothes, &c., were scarcely ever noticed in the ordinary cases of the seven days' fever, so that the description of Huxham, when giving the signs of typhus, where he says—"Omnes corporis sensus maxime depravantur; vix egri vident oculis apertis, perditur olfactus, perditus auditus, vix etiam sapidissima gustent, torpent adeo membra ut parum admotum senteseant vel acerrima vesicatoria," could with little aptness be applied; except, perhaps, in the most severe and fatal cases. When we consider what vitally important organs the brain and spinal marrow are in the animal economy, and how intimately connected they are with the great processes so indispensably necessary not only to health but life itself, that their disorder is momentarily conveyed to the most remote parts of the frame, it may then be readily imagined how any morbid condition, located in those great centres of the nervous system, must influence and peril those functions upon which life directly depends. When grave changes are going on in the encephalon, other and co-existent complications are then liable to be either overlooked or not sufficiently regarded, but when the brain is free from any serious disorder then the symptoms denoting disease in the thoracic or abdominal viscera become so prominent as to fully warn us of their presence and extent: thus it was in the fever now treated of: the hepatic region, as the liver was so frequently affected, was generally referred to by the patient as being the seat of the greatest suffering. In a very great majority of the cases which came under my own observation the head was so slightly disordered as to require but little attention; it was generally an *aching* that was complained of, and the manifest symptoms were those of vascular excitement, rather than the more important ones of a further advanced stage. With a view to cleanliness, and the comfort of the patient, the head was generally shaved on admission, which, with the application of cold, mostly sufficed as remedial measures; in more urgent cases, however, half a dozen or eight leeches usually afforded the desired relief. There was, for the most part, a good deal of watchfulness, the sleep was disturbed by sudden startings or terrific dreams, and immediately on awaking slight delirium would be apparent. Upon reference to Table No. VI., it is shown that 350 out of 450, being 1 in 1·28, or about 1 in 1¼, or 4 out of 5, had more or less of head

* Scottish and North of England Medical Gazette, Oct. 7th, 1843.

affection, this seldom consisting of anything more than the symptoms before described. In Table No. VII., 32 out of 40 cases, being 1 in 1·25, or 1 in 1¼, had the disorder in question; and in Table No. VIII., 54 out of 80 cases, especially during the first days of the disease, complained of the head, being 1 in 1·5; and out of that number, 14, being 1 in 1·57 of the aggregate, required the application of leeches. The post-mortem appearance of the brain will be alluded to hereafter.

VI.—*A very great majority of the cases had pain and tenderness over the hypochondriac and epigastric regions, and sickness and vomiting were almost constant symptoms during the commencement of the disease.*

The numbers of patients who were afflicted with pain and tenderness over the hypochondria and epigastrium were so great as to render these well-nigh universal symptoms; and if even slight pressure was made, there were but few instances amongst them who did not then experience more or less pain in these localities. Sickness and vomiting were generally associated with the symptoms described, and the matters ejected were mostly of a darkish green; the degree of colour varying, however, according to the quantity of liquids taken into the stomach. Sometimes the pain in the epigastrium was complained of more than at the hypochondria, and in such cases the vomiting was generally more severe and persistent; and in those persons in whom the pain was chiefly located in the right hypochondrium, a jaundiced condition was very frequently observable. During the first two or three days of the fever, the sickness formed a very predominant feature; the patient would often lay his hand over the stomach, and complain of a weight or sensation of loading, and frequently everything taken would be quickly rejected during the first forty-eight hours. After the third day this distressing symptom would often be greatly mitigated, or have entirely vanished. Occasionally mere nausea was complained of, but upon interrogation it was generally ascertained that the preceding symptoms had been more urgent. The stomach being so commonly affected as it was in the epidemic, there were strong reasons for the supposition that some other organ was primarily affected; and this was undoubtedly the liver. Where the hepatic viscus was so frequently disordered as it was in the seven days' fever, the gastric affection was easily accounted for: the liver being morbidly distended with an undue secretion of bile, the bilious matter, by a reflex action of the duodenum, would be conveyed into the cavity of the stomach, on the internal surface of which any such irritant as the secretion in question could not fail to produce the sickness that was so commonly noticed. Idiopathic gastritis is an exceedingly rare disease, and indeed some authors have gone so far as to assert that it never occurs unless some irritant has been taken, or some neighbouring or other organ primarily affected—as by hepatitis, peritonitis, podagra, &c. In remittent fever, sickness and vomiting constitute a leading feature in the complaint, and in this disease the morbid state of the liver is the undoubted proximate cause of these symptoms.

In Table VI., out of 450 cases there given, 273 had pain and tenderness over the epigastrium, associated with sickness and vomiting, being 1 in 1·6, or about ten cases out of every sixteen; and the proportion would undoubtedly have been far higher had the cases been seen from the first day of the disease, or if they could have been admitted into the hospitals at an earlier period of their fever. In Table VIII. it is shown that 56 out of 80 cases—being nearly 6-8ths of the agregate—had nausea or vomiting during the stage of invasion. The subjoined case may here be given:—

Case IV.—*Gastric affection, with hypochondriac tenderness—Crisis by diaphoresis.*

Margaret Collins, æt. 28, married, hair and eyes dark, is not at all reduced, and of healthy constitution. Admitted July 22, 1843.

States has never laboured under any severe disease, with the exception of small-pox, this being many years ago. On the 16th July, first experienced the accession of her present indisposition, which manifested itself by rigors and flushings, followed by head-ache, pain in the shoulders, extremities, and over the lumbar

region, with a good deal of nausea and vomiting.

On admission complains of same symptoms: has great pain and tenderness on moderate pressure over hypochondria and epigastrium. There is great muscular debility, anorexia, much thirst, breathing accelerated, and full inspiration is performed with some uneasiness and difficulty. No cough, nor any expectoration. Sleeps indifferently, and seems fretful. Bowels open, tongue loaded with a whitish-yellow pasty looking coat, but is generally moist. Pulse 124.

Mist. Salin. Diaphoret. ℥viij. cujus Cap. ℥i. 4ta. qq. hora. Vespere habeat haust. cum Sol. Mur. Morph. gt. xxx. in eq. ℥iss.

July 23rd.—Perspired very freely during last night; feels much easier; skin cool and moist; breathing unattended with pain; tongue clearer. Pulse 88, of tolerably good strength. Sickness in a great measure arrested.

24th.—No particular change since yesterday: to have

Morph. Draught repeated at bed-time.

25th.—Feels much easier; less tenderness at epigastrium; does not complain much of nausea. Says she is very weak.

Habeat Vin. Rub. ℥ iv. in die. Vespere. haust. Morph ut antea. Alia medicament. omittantur.

26th.—Is rather better; bowels confined.

Ol. Ricin. 3vi. statim sumend. Vin. Rub. Cont.

27th.—Pulse natural; continues to improve.

28th.—Improves; tongue moist; pulse 72. Complains of some degree of pain in right hypochondriac region, which extends to epigastrium.

Sinapismus statim parte aff. appd. Hab. Linctus-opiatus.

29th.—Skin moist; tongue clean; pain in hypochondria and epigastrium relieved by mustard poultice: in all respects is carried on favourably.

31st.—Complains of much pain today over epigastrium, which is aggravated by slight pressure. Tongue rather dry; bowels confined; skin hot, and feels pungent to the fingers. On examination, right hypochondriac region seems a little full, and on percussion elicited sounds are less clear and sonorous than normal. Has had some vomiting of a greenish bilious-looking liquid. Pulse 120.

Hirudines viii. epigastrio appd. Mist. Salin. Diaph. ut antea Ol. Ricin. ℥vi. statim sumend. To be put on low diet.

August 1st.—Pain at stomach relieved by leeches; bowels open; tongue still dry; skin feels hot and burning. Slept only moderately last night. Pulse 128.

Mist. Contr. et Vespere habeat haustum cum Sol. Mur. M. gtt. xxv. in aqua, ℥iss.

2d.—Did not sleep well during fore part of night; sweat this morning, and has slept for several hours afterwards; skin cool and moist; bowels rather confined. Pulse natural; still some pain in stomach; and has occasional vomiting.

Enema domestica statim injiciatur.

3d.—Skin cool and moist; some vomiting still, at intervals. Pulse nearly natural, but rather weak; bowels open; tongue cleaner.

Cerevisia Oj. per diem. Pulvis effervescent. subinde.

4th.—Pulse natural, of better strength; has had no vomiting today. Bowels open. Complains of some muscular pains, and has an aching of the right shoulder.

Liniment. Saponis c. Opio humeri dext. applicand. bis terve di. Pulvis effervescens. Linctus opiatque cont.

4th.—No more vomiting; complains of no pain. Pulse 80; tongue rather dry at edges, but moist and clean at apex and edges; bowels open.

5th.—Much the same as at last report.

7th.—Continues to improve.

10th.—No pain; bowels open; free from sickness; tongue and pulse natural.

May have common diet.

13th.—Continues to improve; no return of pain or vomiting; tongue clean; pulse 74.

15th.—Improves.

18th.—Goes on most favourably. From this time she continued to mend, and in a few days subsequently was dismissed from the hospital.

Remarks.—It is reported, in the above cited case, that the attack was

ushered in with a good deal of nausea and vomiting; that on examination there were pain and tenderness on moderate pressure over the hypochondria and epigastrium; that on the night of the sixth, or early on the morning of the seventh day, diaphoresis in a summary manner cut short the febrile state; that the pulse fell from 124 to 88 in the course of a few hours, and with such reduction an attendant improvement in the general symptoms was observed, and in particular that the sickness was greatly relieved. On the 28th the right hypochondrium and the epigastrium were still tender, which affection was, however, benefitted by the sinapism. On the 31st (being the fifteenth day) the relapse had evidently set in; the pulse quickly rose to 120, and the vomiting again returned, the matters ejected consisting chiefly of a greenish bilious fluid. Two days from this date the disease was again resolved in the usual manner, viz. by diaphoresis; but still, although the apyrexial state seemed complete, as evinced by a return of natural pulsation, with certain negative indications, the pain in the stomach, with occasional vomiting, continued, and was of an obstinate character. In the report of the 31st it is stated that there was dulness of the right side, and on the 4th August it is mentioned that there was an aching of the right shoulder,—significant signs of hepatic congestion.

This case was certainly one where the gastric complication was of an unusually persistent nature, and, as before asserted, the sickness, in the majority of instances, was only observed during the first days of the fever, and it almost always became effectually arrested on the supervention of the critical perspiration.

No. VII.

Respecting the pain so frequently complained of in the left side, such might mostly with correctness be attributed to disease of the spleen, which was so unusually common in the fever. Were we but possessed of more decisive knowledge as to the true nature of the spleen in the animal economy, its pathological conditions would be better understood. If we are to consider, with most physiologists, that it acts as a kind of reservoir to the circulation carried on in the abdominal viscera, and that its distensible qualities avert the evils which might accrue to certain of these visceral organs from an irregular distribution of blood, we can at once perceive the manner in which it becomes enlarged in intermittent fever; and the same line of reasoning is equally applicable relative to the epidemic, seeing that the latter bore certain resemblances to the former. In an intermittent the powerful fits of shivering determine the blood from the surface in anormal quantity to the internal parts, and, as before stated, this viscus, under such circumstances, is capable of taking up a large quantity of superfluous vital fluid, which is thus thrown upon those organs; and which, were it not for the provision that nature has thus supplied, must have acted much more deleteriously; and, as rigors were so exceedingly common in the epidemic, as also relapses with other features similating the intermittent type, it seems a plausible inference to be arrived at, that the spleen was morbidly enlarged from the operation of causes pretty similar to those producing its congestion in an intermittent.

Some physicians have contended, amongst whom may be named M. Piorry, that an inflammatory condition of this organ is the sole and prime origin of intermittent fever, and that the whole of the phenomena presented by that form of the disease originate in, and immediately depend upon, such morbid condition. This localistical doctrine, however, is manifestly untenable, because an intermittent may be apparent previous to a morbid enlargement of the spleen; because the diseased condition of it is not by any means uniformly in proportion to the degree of intensity of the fever; because its inflammatory state in an intermittent is often exceedingly doubtful, it being in general merely congested, and because we are not aware that any remedial means that we possess, which if singly directed to that organ, could abruptly check the progress of the fever—a circumstance that ought to follow as a natural sequence if the views of M. Piorry and others were correct: again, the curative measures employed in cases of acute splenitis, that were noticed in the seven days' fever, did not cut short the pyrexial symptoms of the idiopathic fever—did not prevent a relapse, nor in any way materially alter the general features of the distemper.

Acute inflammation of the spleen is a rare disease, more especially now that intermittent fever in this country has become so uncommon, and acute idiopathic inflammation of its peritoneal covering is so very seldom noticed as to be considered by some authors as never occurring.* Its most common form of disease is a mere apyrexial state of congestion, or a chronic inflammatory action that may continue for some years,† which generally terminates either in a black degenerated mass, of soft pulpy consistence,‡ or, which is the most seldom, ends in suppuration: this last form, however, is but very rarely observed.§ In the seven days' fever, several and some well-marked cases of acutely inflamed spleen came under my notice, and some of these went on to a mortal termination, or at least seemed importantly concerned in the induction of death. I then saw many instances where the organ had increased to three or even four times its natural

* Abercrombie, &c.

† Franc, Lieutaud, Diemerbroeck.

‡ Lossius, Crendal, and in the Calcutta Transactions.

§ Portal, Jacquinelle, Abercrombie, Grotanelli, &c.

size,* and in my own humble opinion there is little doubt that this organ was more frequently affected than has been noticed in any recent febrile visitation. Splenic disorder is generally and with much correctness considered as a secondary and not a primary disorder—such being dependent, as a justly celebrated writer observes, "upon deficient energy in the system, particularly of the vital organs." † Between the liver and the spleen there is a very remarkable sympathy, and there is mostly, if it be not said uniformly, demonstrable disease of the former associated with that of the latter. We are accurately aware that between some organs of the body (and in some instances when they are remotely located from each other) there are peculiar and unaccountable sympathies, as between the mucous membrane of the digestive canal and the cutaneous tissue—the testes and larynx—the uterus and mammæ, &c.; and, undoubtedly, there is very great sympathy between the viscera now considered, by which may in some measure be accounted for their simultaneous affection.

Dr. Henderson, at an early period of the seven days' fever, had witnessed no less than eleven well-marked cases of acute splenitis, and if particular attention had been given, in order to discover the exact ratio in which they occurred, there is little doubt that the complication in question was very high, and indeed so much so as to render this affection, and its unusual frequency, one of the distinguishing peculiarities of the distemper. Dr. Cormack, in his work, notices the complication, but concludes that the organ was *not* inflammatorily distended, but in a state of mere congestion. There were certain cases presented to my own inspection where decided pyrexial symptoms were apparent, and only referrible to the local cause, because they become manifest during the remission—after the idiopathic fever had been clearly and effectually resolved by the usual critical sweat, a fact evidently proving that unequivocal inflammation was *sometimes* witnessed in this organ, although it must be allowed that simple congestion was by far its most frequent condition; yet what is endeavoured to shew is, that its actual inflammation was not very uncommon in this fever. In those cases which I saw there were sharp lancinating pains, and dulness on percussion over the splenic region, and this dulness would sometimes extend over a space three or four times as large as when the organ is of its natural size. In some few instances the dulness reached so far as nine inches from the spine to the latero-anterior aspect of the thorax, and six inches in perpendicular. In these cases cupping and leeches, with calomel and opium, for the most part quickly reduced the circumscribed dull sound; and I have seen the line of dulness (after having been mapped out by means of the plexímeter) reduced to an inch or an inch and a half in diameter in the course of twenty-four hours;* and with such diminution of bulk the symptomatic fever has declined in a proportionate degree, evidently proving that the organ was inflammatorily distended. That the affection so common to this viscus during the epidemic was not at all times merely congestion, the following testimony may be cited from an account given of the fever by a physician who witnessed much of the distemper:—"That the enlargement of the spleen," says the writer, "was not the result of ancient organic

* I am aware that the spleen is sometimes considerably more enlarged than what is mentioned in the text; yet in those cases it has generally been preceded by, or accompanied with, intermittent fever; and under such circumstances it has gained an incredible size, instances of which are mentioned by Lieutaud, Franc, Wardrop, L'Hermite, &c.

† Annesley on the Diseases of India.

* In illustration of the sudden manner in which the spleen enlarges and diminishes, the following quotation may here be cited:—"One of the most singular facts in the pathology of the spleen is the very rapid manner in which enlargement of it takes place, and the equally rapid manner in which it subsides. Some of the cases of this kind which I have seen appeared so very extraordinary that I suspected some fallacy until I found similar cases described as of frequent occurrence by writers on the diseases of India. Several years ago, I saw, along with Dr. Combe, of Leith, a seaman who had contracted ague in England a few weeks ago, and had returned to Leith with the disease going on in the usual manner. In the left hypochondrium there was a firm defined tumor, arising from beneath the margin of the ribs, and projecting downwards several inches. We agreed that our first object was to arrest the fever by the usual means, leaving this remarkable tumor for future consideration; but on returning about a week after, I found that the fever had been easily arrested, and that the tumor was entirely gone."—*Dr. Abercrombie on the Diseases of the Stomach and other Abdominal Viscera*, p. 411.

disease was abundantly evident from the usually rapid decline which followed leeching the hypochondrium, and the other remedies which were used. In some cases the affection occurred during the existence of a paroxysm of the fever; in others it happened after the paroxysm was over, and was ushered in and accompanied by a proper symptomatic fever, differing from a paroxysm of the epidemic fever in this, among other circumstances, that it yielded speedily to the local remedies that were addressed to the spleen, and subsided along with the latter*." The foregoing statement at once proves the nature of the affection so frequently noticed with regard to this viscus, although, as before advanced, its active inflammation might be considered as the exception, and simple congestion, to a greater or less extent, the rule. An instance illustrative of this complication may here appropriately be inserted.

CASE V.—*Acute splenitis.*

Mrs. Leeson, æt. 38, married; had eleven children; spare habit; admitted March 29th, 1844. States that she became affected with headache, pains in the limbs, and rigors, on the evening of Monday last (25th). One of her daughters had the epidemic, and is at present in the wards. Has had occasional sweats since the accession of her illness, and also at various times had sickness and vomiting. Has not complained of any epigastric tenderness before to-day.

April 3d.—On pressure over epigastric and hypochondriac regions, much tenderness is experienced. Percussion over left hypochondrium for 4½ inches vertically is dull, and the dulness extends forwards from the vertebræ along the lower margin of the hypochondrium to the epigastrium Nothing can be detected below the margin of the ribs. On the right front the hepatic dulness begins at the fifth rib, and extends below the margin of the hypochondrium. A particular examination cannot be attempted on account of the acute pain which is experienced on the least pressure. Has had some diarrhœa from the commencement of her attack, and yesterday had frequent calls to stool, with tenesmus, without any passage of fæces, but some greenish mucus was voided. During last night was only once called to stool, and the evacuation consists of mucus, though somewhat mixed with fæculent matter. No tenderness in abdomen, except as already specified. Urine said to be in good quantity, but not kept; much thirst; tongue dry; skin universally of a dingy yellow, which appearance first became manifest the day before yesterday. Is languid and feeble; no delirium; was leeched at the epigastrium, which produced slight relief.

℞ Nitratis Potassæ, ʒj.; Aquæ, ʒvj. Sit. Mist. Cap. ʒj. 4ta. q. q. horâ. Habeat. Sp. Comminis, ʒiv.

April 4th.—Continued much in the same state until a few hours before death, which occurred at six o'clock this morning. Had no coma nor delirium, and was quite sensible until four o'clock.

Sectio Cadaveris, April 5th, 1844, 33 *hours after death.*

Body a good deal emaciated; surface suffused universally with a dingy yellow.

HEAD.—*Brain:* Superior surface of dura mater tinged here and there with yellow patches. No unusual vascularity of pia mater; nor does the cut surface of the brain present any unusual number of bloody points. The serosity in ventricles amounts to ʒj¾.

THORAX.—*Lungs:* The left lung is considerably smaller than the right, and firmly connected to the parietes of the chest throughout by old adhesions; it is a good deal congested with blood, but crepitates freely on pressure. The right lung is free from adhesions, and is somewhat emphysematous at its apex and anterior surface. On its posterior aspect there is a good deal of congestion, but crepitation is distinct. The apex and upper lobes generally contain a considerable number of calcareous and putty-like concretions.

ABDOMEN.—*Liver:* This organ projects considerably beyond the right hypochondrium; weighs 5 lb. 4 oz.; its colour is uniformly of a pale ochre yellow. Blood oozes from fresh cut surfaces, but only from considerable vessels; on pressure, a little blood, mingled with a yellow fluid, may be expressed generally when a fresh section

* Craigie's Edinburgh Med. and Surg. Journ. Jan. 1844.

is made; its consistence is soft, and very friable. *Gall-bladder* is flaccid, but contains a considerable quantity of tenacious, viscid, dark-greenish looking bile. *Ducts* pervious. *Spleen* is loose in its situation, and presents no appearance of lymph on its surface. The appearance of a section of it has a great resemblance to raspberry jam; easily lacerable, and of soft consistence, but is not diffluent; scattered throughout its surface there are a number of minute whitish specks; weighs 20 oz. *Kidneys* are somewhat flaccid, elongated in their form, and smooth upon their surface; of a pale yellow colour; cortical substance presents its usual characteristics, nor is it contracted in depth.

Other organs and structures do not present any uncommon or diseased appearance.

Remarks.—In the above detail of this woman's affection, we see that the symptoms of the disorder were, at the invasion, of the ordinary character. There was pain produced by pressure over the hypochondria and epigastrium; percussion demonstrated a morbid extent of dulness over the splenic region, correctly indicating the great size of that organ. The pain and tenderness extending from the right hypochondrium to the epigastrium denoted a diseased condition of the liver,—a circumstance of some consideration, inasmuch as disease of the spleen is well nigh always, and it might be said invariably, associated with a morbid state of the hepatic viscus.

The post-mortem appearances are interesting, inasmuch as they fully verify the diagnostic symptoms. The brain and its membranes presented very nearly the ordinary character, and the serous exudation was found in unimportant quantity. The appearance of the lungs, though manifesting a morbid condition of long standing, was by no means such as to induce a mortal issue. The left was considerably smaller than the right, and firmly bound to the chest by old pleuritic adhesions; but we know that life can be supported, and it might almost be said that health is not incompatible, with a considerable obliteration of the pulmonary organs, and individuals have been known to live many years when the respiratory function was carried on by one lung alone;—again, those who have had much opportunity of making post-mortem examinations are well aware of the very frequent occurrence (and often when quite unsuspected, existing to a considerable extent) of organized bands of lymph firmly uniting the pleura costalis with the serous investment of the lungs, so much so that it might be deemed that such were capable of seriously interfering with the natural functions of these organs. The congestion spoken of might in a great measure, if not solely, be attributed to gravitation, and was perhaps to a very much less extent during life. The liver, it is seen, weighed more than its ordinary weight. The fluid that oozed from the surfaces of fresh sections was of a character similar to that which is generally observed when there is a redundant secretion. The cut surface was of a pale ochrish yellow, as if blended with an olive tint, and the organ itself was soft and friable. The gall-bladder was preternaturally distended with an increased quantity of bile, although there was no obstruction in the ducts,—a fact shewing that its contents were given off in a morbidly increased manner. The spleen was loose, and resistless to the touch. Its almost diffluent consistence, and weighing from three to four times that of its natural size, readily demonstated the degree of morbid action with which this organ had been affected. The whitish spots were undoubtedly small depositions of pus; and from the appearance of these pustules it is plausible to suppose that, had the patient survived for some time longer, the organ might have gone more completely into the suppurative state, although such termination, as previously asserted, is exceedingly uncommon.

VII. *There were an unusual number of jaundiced or "yellow-cases," and with these were often associated a dark, coffee grounds-looking (and in some instances) black vomit.*

An icterous condition of the skin, when associated with black-vomit, are by most writers * considered as the grand and distinguishing characteristics of the true Mediterranean and

* Père Dutertre, Monro, &c.

West-Indian yellow fever. Other authors, however, who have witnessed much of, and described that disease, do not attach such paramount importance to the symptoms mentioned, but rather form their diagnosis from an assemblage of symptoms than from those two particular states *. It is abundantly evident, when those symptoms do occur, that the mortality is then very high; and this fact has been observed from the earliest times. Yellowness † of the surface is sometimes met with, though seldom in the ordinary continued fever of this country ‡; and there is scarcely any great febrile visitation on record where a certain proportion of jaundiced cases, however small, are not noticed; yet, upon a thorough investigation of the cases manifesting this symptom, it would generally be found that some ancient lesion in, or particular cause of predisposition of, the liver existed, that would readily, under the influence of an acute disease, develop the jaundiced condition. When, however, it occurred so frequently as it did in the seven days' fever, and where no traces could be ascertained of any previous disorder in the biliary apparatus, we are compelled to attribute the disorder in question rather to certain specific and inherent properties in the nature of the poison giving rise to the disease, than to casual circumstances. Some of the Scotch physicians were of opinion that the distemper was veritable yellow fever, to which, as will hereafter be shewn, there were some tallying diagnostic marks; yet at the same time there were negative facts arguing weightily that the two forms were not identical.

Those who have described that particular kind of disease common to the shores of the Mediterranean and the West Indian Islands, variously known under the names of Fièvre Matelote, Bulam-Fever, Mal-de-Siam§, Vomito Prieto‖,¶ Yellow Fever, &c. record an affection which, during its visitations, is generally of the most fatal character; indeed, in some attacks, its mortality has been quite appalling, and in every respect deserving the epithet pestilential; and we find that most of the older Spanish authors call it a pest*. The accounts given of the yellow fever by Wilson, Chisholm, Bancroft, Blane, Gillkrest, Burnett, Fraser, Henner, O'Halloran, Veitch, Denmark, Boyd, &c.; by various foreign authors, amongst whom may be noticed Salva, Rush, Humboldt, Palloni, Tommassini, Gastelbondo, Hurtado, Pariset, Arejula, &c.,—all of these assert the yellow-fever to be a most fatal distemper, and we find, from the accounts given by the majority of these authors, that mortalities in different parts of the world to which it is common have been as great, even in recent years, as the plagues and pestilences of earlier times†.

When we remember that in the seven days' fever there was a very unusual number of yellow cases—that some of these were not merely tinged, but varied in every degree of intensity from a lemon hue to an ochre yellow, and that in some instances death was preceded by the vomiting of an inky-looking fluid—that dark livid petechiæ were common, and vibices sometimes observed—that these yellow cases were far more fatal than the ordinary form of the fever without this complication—that the symptoms in question hurried on with great rapidity, together with other considerations, we are compelled to admit that the fever known at Gibraltar, Malaga, Barcelona, Seville, Barbadoes, Jamaica, Demarara, &c. was in no slight degree resembled. Upon a more rigid examination of facts, and on a more extended view of the question considered, it then seems impossible to conclude that the epidemic of 1843-44, and the true yellow fever, were really identical. 1st. Because the yellow fever, when it has manifested itself in a distant country, has generally been traceable to such country by means of shipping, and the first cases were mostly confined to the neighbourhood of the harbour or docks of such place of importation,—facts not mentioned with regard to the Scotch fever. 2dly. Most writers attribute its propagation so much to the influence of malaria, as to affirm that where the yellow fever breaks out

* Picknard, Jackson, and others.
† Hippocrates, l. IV. and XII. Sec. Prognostics. Celsus, Galen, &c.
‡ Christison, Tweedie's Lib. Pract. Med.
§ Père Labat.
‖ The Portuguese term for *black* is *prieto*.

* Garcia, Suelto, Villalba, Porcel, &c.
† Harness, Monro, Gray, Glasse, Picndo, Johnson, Alfonzo-de-Maria, Bone, &c.

there has often been some prominent and indisputable cause of such malaria, as by the inundation of a river, the cleansing of docks, the turning up of large quantities of fresh soil, &c. 3dly. It usually prevails but in hot seasons, after the atmospheric temperature has reached a certain degree of heat,* and it is in general effectually checked on the setting in of cold weather: now the very first cases of the Scotch epidemic were noticed in Glasgow in the month of December 1842, and from this time continued to increase.† 4thly. In yellow fever a very great proportion of the cases are more or less yellow, while in the seven days' fever the greatest average in the Edinburgh hospitals was 1 in 8, although in Dundee, at one period, it ran so high as about 1 in 4.‡ 5thly. Black vomit is the frequent prelude to death in the one form of disease, whilst it was only in a few rare instances seen in the other. 6thly. Almost all writers whom I have read on yellow fever mention as a diagnostic symptom great injection and redness of the eyes§, a characteristic in the epidemic usually absent.‖ 7thly. In the description of disease that rages in the countries on the Mediterranean, and in the West Indies, death often takes place within forty-eight hours, and mostly about the end of the third day, but I do not remember a single instance in the distemper now treated of in which a mortal issue supervened so soon. 8thly, and lastly. The average mortalities in yellow fever epidemics, are, as above noticed, often very high, the proportionate number of recoveries being a mere fraction, whilst in the seven days' fever the average of deaths was very small¶. From these facts we can scarcely become reconciled to the opinion propounded by some who paid much attention to the Scotch fever, that it was essentially the same distemper as that common to the places spoken of abroad; although, as advanced before, coincidences seemed manifest that were not easily explained away.

Upon reference to the work of Dr. Welsh, before quoted, it is shewn that the proportion of yellow cases in the fever which he has described was as 1 to $30\frac{2}{4}$*, and this symptom was observed in about 1 in $8\frac{1}{2}$ of the fatal cases. In my own statistics it will be found upon referring to Table No. IV. that out of 330 cases, 37 or 1 in 8·91 were yellow; in Table V. out of 80 cases there were 7, or 1 in 11·42; in Table VI. (compiled in January 1844) out of 450 cases, 28 or 1 in 16·07 were yellow; in Table VII. there were 4 out of 40, being 1 in 10; and in Table VIII. which was formed in April 1844, at the decline of the epidemic, and which gives particulars respecting 80 patients, only 2 of that number, 1 in 40, were decided yellow cases. Now these statements are worthy of some attention, as we see that in January 1844 the proportion was nearly threefold greater than in the month of April of the same year, when of course the temperature could not fail to be several degrees higher. In the aggregate of yellow cases, as extending over a period of many months, out of 989 patients 78 were jaundiced, being 1 in 12·06 of the whole number. Dr. Christison, when writing on fever,† says that the complication of jaundice is a rare affection, and asserts that it is most frequently noticed during the autumnal months; the last assertion is fully verified by my own data from time to time given in those communications. Some physicians have contended that the complication of jaundice is of most usual occurrence in those epidemics which are of an inflammatory type. Now the fever of 1817-20 was of a far more sthenic character than that of 1843-44, yet the number in the former was considerably less than that in the latter, which could not be considered of the inflammatory order, but rather belonging to the asthenic or adynamic type of nosological classification. These apparent inconsistencies amid the phenomena of febrile diseases, are so difficult of solution, in the present state of our knowledge, as to render our wisest reasonings too often abortive and erroneous; nevertheless, if we could but penetrate into the arcana of nature, all those multifarious effects

* It has been remarked that the yellow fever in Philadelphia does not rage unless the temp. be 79° Fah.
† See paper No. III. of this Series.
‡ Vide Tables IV. V. VI. VII. and VIII.
§ Rush, Thompson, Gillkrest, &c.
‖ See Paper No. V.
¶ Article "Yellow Fever," in Cyclopedia of Pract. Medicine.

* Welsh on Fever, p. 73.
† Tweedie's Library of Practical Medicine.

which, when their causes are imperfectly understood, so puzzle and perplex the acutest minds, would then seem legitimate and highly probable conclusions, nor would any effect be manifest without its precisely correspondent power of causation, and it is by the constant and careful observation of the operations of nature,—the reflective study of the manner in which she works her ends, that those results which the world terms discoveries are made,—that the researches of science are enlarged, and our capabilities of contending with the ravages of disease increased and strengthened.

The first appearance of the accession of jaundice manifested itself in the conjunctivæ, which were at first slightly tinged, and then increasing in different degrees of intensity. The neck, face, chest, arms, abdomen, and inferior extremities, then became affected, being at the onset of a light yellow hue; and on the complication being fully developed the surface would in some instances assume a deep ochre-yellow, in others a dusky yellowish-brown, resembling somewhat a mahogany shade. These conditions were never so markedly observed in the inferior extremities, especially about the feet and ankles, as in the other parts of the body. Some degree of pain and tenderness were universally experienced in the hypochondria (mostly in the right side) and epigastrium. There was vomiting of a dark-greenish, bilious-looking fluid, generally in large quantity; and in a few odd cases the ejections were black, grumous, and coffee-grounds like, being about the consistency of hare soup: and in one instance which I saw this description of fluid deposited a sediment of inky blackness, which, upon pouring off the supernatant liquid, had a gelatinous appearance, and was somewhat tenacious to the touch; this patient in the course of thirty hours vomited not less than twelve quarts. The bowels were scarcely ever constipated, and the stools were always of a dark colour, manifestly being loaded with bile, often mixed with mucous matter, and sometimes with a black deposit, having the appearance of coagulated blood, similar to that which is witnessed in undisputed cases of melæna. The urine was high coloured, and when in the vessel resembled porter: it tinged linen of a saffron yellow. In some of the worst cases the bed-linen became stained of a yellow colour from the perspiration.* The tongue at the first was covered with a yellowish-white, thick, pasty coat, the apex and edges being clean; this fur, as the affection reached its maximum, became dry, and ultimately of a dark brown or black colour, being cracked and fissured in the centre. On percussion the dulness in the right hypochondrium was to an anormally great extent, and the edge of the liver could frequently be felt protruding below the false ribs.† The skin was hot and dry, sometimes imparting a tingling sensation to the tips of the fingers. In such cases as went on to a fatal termination coldness of the surface, a quick small pulse, hurried breathing, great prostration, contracted pupils, delirium, and coma, were the preludes to dissolution. The urine was often voided in decreased quantity, especially in the worst cases. The parts to which blisters were applied, if in very yellow cases, would on their removal become of a dark blackish brown. Petechiæ were frequently observed, and vibices sometimes noticed; the latter, however, being more rare than the former. Hæmorrhagic discharges by stool were more common (though these were by no means very frequent) than from any of the other internal cavities. In the milder description of yellow cases but little additional disturbance seemed to be added to those already created by the idiopathic fever, although an abundant secretion of bile was well nigh always detected in the alvine evacuations. Such is a brief outline of the leading pathognomonic conditions presented by the jaundiced cases which were presented to my own inspection.

In this part of the subject there are certain considerations which naturally suggest themselves, and to which it may here be well to make a brief advertence.

I. *Was the jaundiced condition in question always preceded by idiopathic hepatitis, or some organic change in the liver, and did it primarily depend upon such morbid states?* On a careful

* Flores Moreno mentions this as sometimes being observed in yellow fever.

† Difficili bile tumet jecur.—Hor.

examination of a great number of cases which I had an opportunity of seeing, there was, as previously asserted, some degree of tenderness experienced in the right hypochondrium, which might most expressively be termed a dull, heavy, aching pain; nor did the degree of this seem always proportioned to the intensity of the yellowness, and other accompanying symptoms. Scarcely at any time was that sharp lancinating pain complained of, which is so symptomatic of the serous investment being inflamed, but the symptoms presented gave evident indications of an engorged state of the viscus; which was undoubtedly its real pathological condition. The stools were not clay-coloured, as we see in some diseases of the liver, but always surcharged with bile. If it had proceeded from idiopathic hepatitis, bleeding, leeches, cupping, &c. would have checked the inflammatory action, and with such abatement arrested the progress of the concomitant states; such, however, was not the case, and therefore little treatment was addressed to the region of the viscus, as the primary cause evidently did not wholly exist in this organ, nor was it owing to obstruction in, or pressure upon, the gall-ducts, as they were always pervious*, and filled with their proper secretion. Jaundice, as most are aware, is sometimes occasioned by an inertness of, and the want of proper functional power in the liver; in cases of abscess, tumors and other morbid products being produced in its structure, and causing pressure on some of its excretory canals, in diseases of the lining membrane of the duodenum, &c.; yet none of these conditions were found to account for the yellowness so commonly observed.

II. *To what pathological causes was the condition in question proximately owing?* If the jaundice had been produced by non-elimination of the bile from the blood, it is fair to presume that the effects upon the system would have been of a more deleterious description, than if first secreted, and then absorbed; and this fact we know to be particularly true with regard to the urine, as the suppression of that secretion is always much more dangerous than when, on account of retention, it is absorbed. In the yellow cases occurring in the epidemic, there were good reasons for believing that the blood was very highly venous; that it was in an unusual manner loaded with those constituents which go to form the bile: it is also a very tenable supposition that the organic influence proper to this organ was affected, which might importantly disorder the function of the organ, and render its secretion of a perverted nature, as we are well aware that the nervous system sometimes acts very powerfully on the liver, even when a person is in a state of positive health, and it is highly probable that it is capable of acting much more so when the system is labouring under any morbid impression; sudden emotions of the mind, as violent fits of passion, excessive joy, an attack of hemiplegia, &c. have been followed by jaundice,* at once proving the influence of the nervous system over the natural actions of the organ. Again, the bites of poisonous animals†, as also surgical operations, and severe wounds‡, have been occasionally succeeded by jaundice, proving the effects of the same; hence, from these facts, it seems a rational inference, that some obscure perversion in the organic nervous influence proper to this organ, being proximately produced by certain inherent conditions in the poison giving rise to the fever, by the operation of which it was highly stimulated to excessive functional action, together with the state of the blood above mentioned, might in some measure, if not very importantly, account for the conditions now treated of. In recapitulation, then, it may be said, relative to this particular part of the inquiry—1st. That the blood was highly venous, and contained an anormal quantity of those matters which go to form the bile. 2dly. That the nervous organic influence proper to the liver, being affected by certain unknown properties in the poison producing the fever, by which its functional action was morbidly increased; thus the former and latter causes giving rise to great engorgement of the viscus. 3dly. An inordinate

* Drs. Alison and Henderson, as well as other physicians, stated, that in all cases of post-mortem inspection which came under their notice the ducts were pervious.

* Chapman, Valsalva, Lanzoni, Baillie, &c.
† Van Swieten, Bartholin, &c.
‡ Sir George Ballingall.

quantity of bile being secreted it was carried in an anormal degree to the duodenum, from whence by the powerful efforts to vomit it was poured over the internal surface of the stomach, and the fæces being greatly impregnated with it, the secretion was thus in a morbid manner brought in contact with the whole surface of the digestive canal, from which (as well as from the liver itself, seeing that it was so engorged and acting with an increase of functional power), the absorbents would carry it into the current of the circulation, and thus every tissue of the body would become discoloured. 4thly. It may also be presumed, that the venous blood, by possessing such a very great proportion of those constituents which constitute the bile, and the liver being morbidly surcharged with this viscid secretion, that its secretory powers were unequal to the task of efficiently separating the bilious matter from the venous fluid, and thus another cause be superadded to those above enumerated in the induction of the appearance now considered.

III. *It may lastly be inquired as to the manner in which death was caused in the severer forms of the yellow cases.* It has been stated above that the jaundiced cases gave indubitable evidence of a redundance of bile; and it is also said that more or less suppression of urine was an accompaniment to other symptoms manifested in the worst of these cases. Thus, then, it may easily be imagined what effect would be produced in the system by an undue quantity of the active principles of these two secretions (cholesterine and urea) circulating in the blood, and thus acting upon the vital organs; and from an attentive observation of many cases of this kind which came under my notice, the brain and spinal marrow seemed to be less affected, when the bowels were slightly acted upon, and strong diuretics administered, thus carrying off these secretions, which, if not promptly removed from the system, appeared to exert their pernicious influence. I do not, however, mean to affirm that death was altogether caused by the agency of these deleterious principles; only they seemed to act an important part amid the train of the other febrile phenomena. In some of those patients who died with the yellow complication, towards the close symptoms very much like those produced by a narcotic poison were apparent; the surface became cold and clammy; the patient laid in a helpless manner on his back; the pulse was weak, the pupils contracted, and delirium and coma wound up the scene. Hence it is an unavoidable conclusion to be arrived at, that the great nervous centres laboured under some potent and depressing agony, in addition to the specific poison of the fever.

The case as annexed is illustrative of the complication now described:—

Case VI.—*Severe yellow case, with head affection, and slight bronchial complication.*

Alexander Gordon, æt. 36: single; a "navigator," of full stature, and well proportioned. Features strongly marked; eyes deeply set in their foramina; hair black; temperament bilious; thorax broad and deep; is muscular and powerful-looking. Admitted Dec. 15th, 1843.

States:—Has been of intemperate habits; had generally enjoyed robust health. On the 12th was suddenly seized with rigors, which were succeeded by nausea, &c. ushering in a fever of the epidemic description. On admission complains of pains in the limbs, with general lassitude and languor; some abdominal tenderness, especially over epigastric region; chief symptoms appear located in head, which is hot and burning; pulse rather high; skin feels hot, and imparts a tingling sensation to the tips of the fingers; eyes preternaturally brilliant; bowels previously resolved by aperients of the saline order; has passed urine in moderate quantity; complains of thirst, but has no appetite for food; some tendency to yellowness generally.

Hab. Statim. Hyd. Chlorid. gr. v.; Pulv. Antimonialis, gr. iij. ℞ Potassæ Nitratis, ʒj.; Liq. Ammon. Acet. ʒij.; Sp. Æth. Nit. ʒvj.; Pulv. Ipecac. gr. x.; Mist. Camph. ʒv. Sit Mist. cujus unciam capiat 4ta q. q. horâ.

Vespere.—Head symptoms in no degree relieved, but rather increased in intensity; great heat of scalp; bowels opened freely; urine passed naturally; skin as in the morning; head is rolled

from side to side upon the pillow, as if in great pain.

Abradatur cap. Hirudines viii. temporibus applicentur. ℞ Mur. Morph. gr. ss.; Hyd. Chlor. gr. j. Sit pulvis horâ somni sumendus.

Dec. 16th.—Head symptoms apparently relieved; slept soundly during the night; some tendeney to diaphoresis; bowels moved, and urine passed normally.

Noon. — Tongue, from remaining glazed and dry, is assuming a darker hue. From an early hour this morning has been complaining of eough, and now expeetorates a glairy frothy mueus, streaked with a bloody-looking diseharge: the symptoms are referrible to a slight bronehial attaek under which he manifestly labours.

Emp. Lyttæ pectori statim applicand. ℞ Mucil. Acaciæ, ℥viij.; Vin. Ipecac. ℥j.; Sol. Mur. Morph. ℥ij. Sit Mist. Cap. cochl. amp. duo 4ta q. q. horâ.

Vespere.—Experienees great relief.

Habeat. horâ somni Pulv. Ipecac. C. gr. xij.

Dec. 17th, morning.—Countenance assuming a leaden hue; hepatic region not more tender than usual; urine passed freely; head mueh as it was yesterday; bowels open.

℞ Calomelanos, gr. vj.; Pulvis Antimonialis, gr. iij. Sit pulvis statim sumendus.

2 o'elock, P.M.—Is beeoming rapidly worse; skin generally presents a mahogany tint; there is excessive prostration of strength; singultus; pulse small and eompressible; surfaee elammy to the toueh; intellect, though slightly obscured, is not mueh impaired, eoherent answers being returned upon interrogation; feet warm; eyes sunk; pupils direeted eonsiderably inwards, which gives a strabismoid expression to the eountenanee.

Habeat. statim Vin. Rub. ℥j.; Sp. Communis, ℥ss. et rep. omni horâ. ℞ Sp. Æth. Nit. ℥vj.; Potassæ Nitratis, ℥ij.; Aquæ, ℥viij. Sit Mist. cujus Cap. ℥j. 4ta q. q. horâ. Sinapismus abdom. applicand.

5 o'clock, P.M.—Has rallied somewhat under the treatment; urine passed freely, and of high eolour; bowels open; pulse more full and regular: ean artieulate better than he did. Tongue thiekly eoated with a deep brown fur, but moist at apex and edges: skin feels clammy, but warm.

Medicamenta Vin. Rub. et. Sp. Cont. Enema Tereb. injec.

10 o'clock, P.M.—Continues a little better; hiccup less distressing, and has pereeptibly been relieved since the administration of wine and spirits.

Dec. 18th, morning.—Has rallied and relapsed alternately during the night; bowels open; passed a tolerable quantity of urine. On the whole no material differenee in symptoms from those deseribed last night. The dejeetions in every respect appear natural.

Medicament. et Vin. Rub. et. Sp. cont.

Vespere. — Tongue eovered with a brown fur, but moist. There is little or no delirium, yet a tendeney to stupor is manifest. The skin yet maintains its yellow, mahogany-looking colour; cough not so troublesome; pulse neither rapid nor weak, but varies much between visits according to the quantity of stimulants given; urine passed freely, and in good quantity: hiecup the same.

Vinum et Spiritus cont. Enema Terebinth. inject. ℞ Nitratis Potassæ, ℈j.; Sp. Æth. Nit. ℥j.; Tr. Hyoscyami, ℥j.; Aquæ, ℥ij. Sit haustus cujus dimid. cap. statim et alt. part. post horas duas.

Dec. 19th, mane.—Is a little more delirious this morning; pulse 85, soft and full; tongue cleaner and moist; has no pain in any part of the body; no eough; bowels open; urine passed freely; skin a little more moist.

Vespere.—Pulse 85; some hiccup; bowels twice opened; urine passed plentifully; tongue moist, and more clean; delirium less; skin warm and moist.

Medicamenta Vin. et Spiritus cont.

Dec. 20th.—Has passed a restless night; reported to have been delirous at intervals; intellect somewhat obscure; skin not so yellow; countenanee more natural; skin cool; pulse 100, rather small; no cough; no epigastric pain; bowels moved twice during the night; urine exereted of a dark porter-like colour.

Omnia Medicamenta et Vin. Spiritus cont.

Dec. 21st.—Yellowness disappearing; seems quite collected; expresses himself as being free from all pain; countenance natural; bowels open; urine passed plentifully. Had Enema Terebinth. last night, with relief to flatuleney; pulse quiek; skin moist and warm.

Vespere.—Somewhat feverish, with hot skin, and complains of thirst, headache, and restlessness. Pulse 100; bowels relieved only once during the day.

Omit wine and spirits for three hours.
Enema fœtida statim injiciatur.

Dec. 22d.—Feels better; pulse 100; skin cool; complains of no pain; hiccup is still troublesome; bowels open; urine passed copiously; yellowness of surface disappearing.

Vin. et. Sp. cont. ℞ Sp. Ammon. Co. ʒj.; Sp. Æth. Sulph. ʒjss.; Sp. Lavand. Co. ʒj.; Mist. Camph. ʒvj. Sit Mist. cujus cap. ʒj. 4ta q. q. horâ.

Dec. 23d.—Tongue cleaner; yellowness more indistinct; bowels open; urine voided in good quantity; skin cool; pulse nearly natural; hiccough continues, but with less frequency.

Medicamenta, &c. cont.

Dec. 24th.—Slight hiccough still present; all other symptoms nearly gone.

Ordered steak diet*.

Dec. 25th.—No pain whatever; tongue, which has been exceedingly coated, is more tender, as also the gums.

Habeat. gargarisma c. Soda Subboratis.

26th.—Continues to improve.

27th.—No return of any morbid affection.

28th.—Progresses favourably.

29th.—No return of pain, or any untoward symptom.

30th.—Expresses himself as speedily recovering.

31st.—Convaleseent.

Remarks.—It is an observation advanced by some authorities of eminence who have written on yellow-fever of the West Indies, that a "firmness of fibre" predisposes to that disease—that strong muscular individuals are much more prone to its contraction, and have it in a much more malignant form, than those who are naturally of a relaxed habit. This man, as reported, was of a powerful athletic conformation, and we see that he had the distemper very severely. On admission, it was evident, from the dusky yellowish hue of the skin, that he would go on to the jaundieed condition. On the day of admission the head was more than ordinarily complained of, and this affection continued for some days. On the fifth day of the disease alarming symptoms had set in; there was a dingy hue of the whole surface; the countenance looked sunken and congested; the pulse was small; delirium, &c., present; constituting a group of symptoms that were calculated to render the result very doubtful. The reader will see that large doses of the nitrate of potassa were given in order to keep the kidneys in action, and thus avert the evil consequences that might arise from the functional derangement of those organs, especially as there was some tendency to a suppression of the secretion. The singultus was unusually persistent, and I only remember one other instance in which it was so distressing and continued so long. By the seventh day we see there was slight improvement; and on the twelfth he was ordered steak diet—circumstances very different to what we know with regard to typhus. The head symptoms were probably in some measure dependent upon urea and cholesterine. The stimulants that were thus freely given were undoubtedly of essential service in supporting the vital powers.

* Breakfast:—Bread, 6 oz.; Coffee, ½ pint.
Dinner:—Potatoes, 16 oz.; beef-steak, 4 oz.; broth, 1 pint.
Supper:—Bread, 6 oz.; tea, ½ pint.

No. VIII.

The subjoined case of Donaldson forms another good exemplification of the yellow affection.

Case VII.—*Severe form of the yellow affection terminating fatally.*

James Donaldson, æt. 55, a shoemaker, from Campbell's Close, High Street, admitted Nov. 28th, 1843.

States:—Five days ago (Nov. 23d) had a rigor, which was succeeded by the usual initiatory symptoms of the epidemic.

On admission, complains of muscular and arthritic pains, tenderness at epigastrium, with nausea, and occasional vomiting: the ejected matter forming a dark green bilious-looking liquid. Skin generally is of a yellow tint, and tunica adnata of a similar hue; tongue covered (except at apex and edges) with a thick yellowish brown coat, but generally moist; urine high coloured, and last stool reported to be dark. Skin feels hot and harsh to the touch; says he has slept badly for the last two or three nights; has a good deal of headache, which is referred chiefly to the frontal region; bowels confined: pulse 108, rather compressible.

Abradatur capalitium. Habeat Infus. Cathart. ℥iv.

Vespere.—Symptoms a good deal the same as those in the description of his case at noon; bowels not moved, and head feels hot.

Cloths immersed in cold vinegar and water to be frequently applied to the head, and the cathartic infusion may be repeated if the bowels be not opened in two hours time.

Nov. 29th.—Complains of a good deal of pain in the head; conjunctiva of a deep saffron yellow; skin generally of a bright lemon hue, being most distinct upon the neck, chest, superior extremities, and abdomen: on legs and feet not so intense as on other parts. From being a light yellowish tint, as reported yesterday, the previously described symptoms have supervened during the last night. Bowels confined; pulse small.

Infus. Cathart. Rep. ℞ Calomelanos, gr. vj.; Pulv. Opii, gr. iss.; Conf. Rosæ, gr. viij. Sint pilulæ duæ statim sumendæ.

Vespere.—Bowels opened three times; dejections dark and bilious; urine passed in tolerable quantity, and of a deep porter-colour; otherwise much the same.

November 30th, *Mane.*—Skin very yellow to-day, especially on neck, face, chest, and arms; great tenderness over the hypochondriac regions; tongue not so much loaded, but glossy and dry; pulse small and weak; breathing laborious and hurried; bowels open.

Pilulæ c. Calomel et op Repetantur. Habeat Mistura Camph. ℥ij. omni secunda hora.

Vespere.—Much the same as at noon: pulse slightly improved.

Mist. Camph. Cont.

Dec. 1st.—Yellowness intense to-day; is laid on his back low down in the bed. Pupils contracted; breathing hurried and short; much pain over the hypochondriac and epigastric regions; slumbers a good deal; bowels open; fæces dark olive-coloured; urine of a porter-like appearance, and scanty; extremities cold and clammy; pulse 80, weak and thready, as to be almost impereeptible.

Hot bottles to be applied to the feet. Emp. Lyttæ hypochond. dext. statim applicetur. Enema Terebinth. quam prium inject.

℞ Sol. Mur. Morph. gtt. x.; Sp. Æth. Sulph. gtt. xx.; Aquæ Menth. Pip. ℥iss. Sit haustus statim capiendus. Habeat Sp. Com. ℥j. in aqua caldia om. hora.

Vespere.—Symptoms generally assuming a more alarming character; tongue dry and glossy; pulse still so weak that it is with difficulty discovered at the wrist; pupils small and piereing. Is insensible, and slumbers constantly, except when for a moment roused, and then upon interrogation a partially coherent answer is returned.

Sp. Communis Cont. Haustus Rep. Enema Terebinth. Inject.

2d.—Continued to sink, and died during the night.

Sectio cadaveris fifty hours after death.

Head.—Brain.—Removing the calvarium, the cerebral vessels look gorged and turgid. Some febrile effusion beneath the arachnoid; convolutions extremely deep. In lateral ventricles ʒj. of serous effusion, and ʒv. more were discovered on removing the cerebrum in the base of the skull.

Chest.—Heart and lungs healthy.

Abdomen.—Liver weighs 5lbs. 10 oz.; is gorged with a dark bloody thick-looking fluid, which, on a section being made in the organ, is upon pressure easily expressed from the cut surfaces. Gall-bladder filled to distension with a thick, viscid, dark olive-coloured bile, being so tenacious that it might appropriately be termed ductile; and a portion can be raised, by means of a knife, in a continuous string to the height of three feet. The gall-ducts are perfectly pervious.

Kidnies remarkably yellow, and their pelvic lining is of a saffron hue, but present no other morbid characters.

Spleen weighs 12 oz., congested, soft, and easily broke between the fingers, but not diffluent.

Intestines slightly injected, but no traces of ulceration in the ilium or any other part.

Remarks.—On the day of admission, being the fifth of the fever, from the general dinginess of the surface, it was quite evident that his case would be one of the yellow complication, and from the accompanying symptoms it was to be anticipated in a severe form. There was tenderness at the epigastrium, vomiting of a dark bilious matter, and discolouration of the conjunctivæ; the stools were dark, being highly saturated with bile, and the patient complained of a good deal of frontal headache. On the sixth day the yellowness had become greatly increased, and was observed of a deeper hue on those parts as before mentioned. According to the next report, being that of the seventh day, symptoms of a very formidable nature were manifest; the yellowness had now become intense, there was great tenderness at the hypochondria, dry tongue, quick and feeble pulse, with hurried respiration,—circumstances seriously indicating the precariousness of his condition. Early on the subsequent and last day the unwelcome preludes to dissolution were indubitably at hand. The helpless manner in which he laid in bed evinced a general declension of muscular power; the contracted pupils and lethargic state showed the very probable effusion of serum into the various cavities of the brain; the dejections continued dark, and surcharged with bile; the natural temperature rapidly decreasing, and the pulse now had become so weak as to be almost imperceptible. These symptoms became gradually more alarming until death.

To the post-mortem appearances I would particularly beg the attention of the reader, as it is by first attentively surveying the operations of morbid actions, and then examining the physical conditions after death, that cause and effect can most satisfactorily be traced, and those fundamental truths arrived at by which our improvement in practice is likely to be acquired, although, as previously observed, the autopsies made in fever are less conclusive than in any other class of disease. The brain was turgid, and the blood-vessels unusually injected, and not less than ʒxiii. of serous fluid had been exuded,—well accounting for the cephalic symptoms prior to dissolution. The liver was considerably larger than the average weight, being much engorged and distended, by which may be explained the cause of the dull aching pain experienced in the right hypochondrium. The gall-bladder was unusually full, and its contents anormally viscid and tenacious, notwithstanding its natural outlets being in no manner obstructed. The pelvic lining of the kidnies, even, were stained with the yellow colour; and I well remember, when opening this body, that the cartilages of the false ribs of the sterno-clavicular articulation, &c. were similarly tinged. The congestion of the spleen might have been anticipated from the pain complained of in the left hypochondrium, and we saw that it was morbidly enlarged. When we consider that a diseased secretion like that which was poured out by the biliary apparatus was for some time brought into contact with the digestive surface, it is a very probable inference that more or less vascularity would be

produced in the mucous membrane of the canal. Ulceration in the lower part of the ilium, and about the ileo-cæcal valve—the most common parts in which this morbid appearance is found in true typhus*—was scarcely, if at all, observed in the inspections of the seven days' fever; and from what I have heard and read respecting the yellow fever abroad, an ulcerative condition in these parts is very rarely witnessed in that disease.

Black vomit, although it very seldom occurred in the Edinburgh hospitals,—in fact, forming but an insignificant fraction when compared with the whole number, — yet as some unequivocal cases did occur, and as in other parts of the kingdom they were more frequently met with than in the metropolis, consequently this particular feature cannot with propriety in silence be passed over. In yellow fever epidemies abroad undisputed black vomit is the concomitant of the most malignant description of that disease, and, as before stated, from this symptom, in conjunction with that of yellowness, many form their diagnosis of that affection. The writers of ancient times, the older authors, and modern physicians†, regard black vomit as a very alarming condition‡; and, certain it is, that when it has fairly commenced, a very small proportion of the patients recover. Vomiting of dark-coloured matters has sometimes been noticed during febrile attacks in this country, and certain physicians have then imagined that such fever was a modification of the real yellow fever, and that their only difference was in the degree of their malignancy, and not in their radical pathology§: this opinion, however, is quite discrepant to the notions of many respectable authorities. The few cases which I saw in Edinburgh all died, and these were patients in whom well-marked indications of jaundice were present. On referring to the accounts given by various writers who have recorded epidemic visitations of yellow-fever, all agree in considering this a most fatal symptom, and, during an epidemic, out of many hundreds of cases, where the black vomit had supervened, scarcely any recovered, and such recoveries as did take place were a mere fraction when compared with the whole; perhaps one or two per cent., or even less than that number.

Respecting the nature of the ejected matters, and the real cause of the blackness, there are various opinions. The ejections which I saw in the seven days fever, were not so dark on the first appearance of this symptom as they were when it had continued for some time; then, reaching its greatest intensity of blackness, it again gradually became of a lighter colour. At the commencement the matters looked like simple bilious vomiting, of a dark greenish hue, from which they became of an inky blackness, and then to a brownish grey. Dr. Bone*, when speaking of the yellow fever of the West Indies, says, that a flaky brown blood-colour usually precedes the inky-black. Without troubling the reader with an enumeration of the several theories that have been advanced respecting the consideration in question, the following conclusions are perhaps the most correct inferences in accounting for the morbid product alluded to:—viz. The villous coat of the stomach being in a state of partial disorganization, rupture of the arterial capillaries takes place, and the blood is thus exuded into the cavity of the stomach, and mixed with the contents of that organ; the gastric secretion being morbidly increased, and possessing perhaps an undue degree of acid properties, a chemical action ensues, by which the contained fluid becomes inspissated, and acquires a dark colour of various degrees of intensity; this, of course, being determined according to the proportional admixture of bile, of exuded blood, and the power of the secreted acid. The kind and quantity of liquids drank, as well as other descriptions of ingesta taken, by diluting and acting upon the morbid products contained in the organ, exert their due influence, and modify the characteristics of the vomited matters. When this affection is present there is always more or less vitiation of the bilious secretion, and, indeed, some have asserted that the black ejections are nothing more than

* Louis, Broussais, &c.

† Hippocrates, Thucydides, Celsus, Galen, Sydenham, Fordyce, Bancroft, Jackson, Carstell, Rush, &c.

‡ Blane considers it a positively hopeless symptom.

§ Stokes, Graves, &c.

* Bone on the Fever of Barbadoes, 1821.

this diseased secretion. The bile now being preternaturally viscid, its incorporation with an acid produces a gelatinous sediment, and the tenacity of this sediment varies according to the viscid nature of the bile, and the strength of the acid; Huxham and Baglivi long ago demonstated this fact. That blood is thrown out in the manner described above, has been proved by ocular demonstration. In one or two instances which I saw there were various ecchymosed patches on the villous coat of the stomach, and in the organ was discovered an inky-looking fluid similar to that vomited by the patient before death. In the instance of Peter Reid, now given, is afforded a good illustration of this complication.

CASE VIII.*—*An example of "black-vomit"—the case terminating fatally.*

Peter Reid, æt. 35, a navigator, single, hair dark, eyes deeply set, features strongly marked, chest broad and capacious, stout and muscular. Admitted December 28th, 1843, (to the medical wards.)

This patient first entered the surgical hospital for an injury done to one of the fingers. Immediately on admission, symptoms of the prevailing epidemic became manifest, and he was quickly sent to the medical department of the institution. On the 24th, the day of his entrance into the surgical wards, a slight tinge of yellowness was observed in the skin and conjunctivæ.

Dec. 28th, *Vespere.*—States that he had much vomiting last night of a dark grumous fluid; yellowness of surface now very evident, as also of eyes. Some pain and tenderness on pressure over the hypochondriac and epigastric regions: on taking a full inspiration, thorax perfectly expands, and no uneasiness is experienced. Pupils slightly contracted; bowels confined; tongue moist, but loaded with a dirty-whitish yellow coat. Pulse of natural frequency and good strength; had vomiting to the extent of two or three quarts since admission this afternoon, ejection being of a dark-looking colour, and about the consistence of hare soup. On allowing the vomited matter to stand and settle, a black coffee-grounds like sediment is deposited.

Enema purgans statim injiciatur. Postea habeat pulv. cum Hyd. Chlor. gr. vi. Pulv. Rhei. gr. x. Sinapismus epigastrio applicand.

Dec. 29th, at visit, noon.—Reported to have vomited four quarts of inky-looking fluid, about the consistency of coffee-grounds. Skin of moderate temperature; bowels opened, and tenderness over the epigastrium much the same. Slept but little last night; pupils still small; intellect pretty natural; urine passed in tolerable quantity; complains of a good deal of thirst. Pulse of tolerable strength, and moderate frequency.

Enema Amyli c. Sol. Mur. Morph. gtt. xl. statim injiciatur. Bibat. decoct. avenæ.

Vespere. — Sickness not so violent since administration of injection, yet still has had vomiting to the extent of a quart of the same description as the last. Complains of no pain, except over hypochondriac and epigastric regions; skin hot; much thirst; pulse a little quicker.

30th, Noon.—Slept but little during the night; had vomiting to the quantity of three pints, the matter not quite so dark as hitherto. Pupils small and contracted; complains of pain in the head; bowels open; surface rather cool and clammy; pulse smaller than it has been; urine passed in tolerable quantity. Yellowness not so intense.

Habeat Sp. Communis. ℥iv. Cap. ℥j. in aqua calid. et saccharo, 4ta quaque horâ.

℞ Sol. Mur. Morph. ℥ij.; Sp. Æth. Nit. ℥ss.; Sp. Ammon. co. ℥ij.; Mist. Camph. ℥vij. Sit. Mist. Cap. ℥j.; omni tria. horâ. Abradatur Capalitium.

Vespere.—Much the same as at visit; vomiting not so severe.

Enema c. Sol. Mur. Morph. repetatur.

* Being unavoidably absent from the pathological theatre during the day in which this body was examined, and as no particular details were taken of the autopsy, I regret that I cannot present the reader with a more than general statement of the inspection. The late Professor Graham, who was present, informed me that there was a morbid quantity of serous exudation in the cavities of the brain, that the liver and spleen were engorged, and in the stomach was discovered some grumous black matter precisely resembling that which had previously been ejected; also that the villous coat of this organ presented some ecchymosed looking patches, which left no doubt as to the exudation of blood.

31st.—Did not sleep much during the night, though he slumbered at short intervals; was delirious; vomiting not so persistent, and the ejected matter was less in quantity and of a more natural colour. This morning seems somewhat unconscious, and answers questions confusedly. Skin feels cold and clammy; bowels open; urine voided in tolerable quantity; much thirst; tongue coated and dry. Pulse 96, small and weak.

Sp. Com. et Mist. Contr. Emp. Lyttæ vertici applicand.

℞ Calomelanos, gr. vi.; Sacch. Alb. gr. x. Sit pulvis s. s.

Vespere.—Seems much worse this evening; is now quite insensible, and has slumbered a good deal during the afternoon. Surface not so warm as natural; lower extremities becoming cold; tongue dry; pupils small; pulse quicker and more compressible.

Bottles of hot water to be applied to the feet.

℞ Sp. Æth. Rect. gt. xxx.; Sp. Lavand. co. gt. xxx.; Mist. Camph. ℥ij. Sit haustus, s. s. Sp. Communis. ℥j. in aqua calida omni horâ.

Jan. 1st, 1844.—Extremities became colder; surface chilly; had slight muttering delirium, and continued to get rapidly worse until 8 o'clock this morning, when he expired.

Remarks.—On a perusal of this man's case it is seen, that with the accession of vomiting were ushered in the most unfavourable symptoms. On the fourth day the ejections were dark and grumous, and on the next they had become of an inky blackness. On the sixth the vomiting still continued, but the matters ejected were of a somewhat lighter colour; there were now the unwelcome symptoms of cephalic affection, while the natural temperature was becoming below its standard; in the evening of this day the vomiting had in some degree declined, but with no mitigation of the other grave symptoms. On the seventh day, delirium, feeble pulse, cold surface, &c. proclaimed too obviously that dissolution was at hand, and he sank early on the following morning. I well remember that this individual, from the first of his admission into the medical wards, was troubled with an unusually urgent thirst, though the pulse was low, the tongue pretty moist, and the surface cool.

VIII.—*There was almost universally a recurrence of the primary symptoms during the patient's convalescence, and such relapse sometimes took place to the third or even fourth time.*

Real relapses in typhus, some physicians confidently assert, no more take place than they do in the exanthemata. By relapse it must be understood is meant a positive repetition of the primary symptoms of the disease, in a patient who is convalescent from fever, having just passed through the febrile state,—the affection spontaneously recurring and again passing through the various phenomena of the febrile paroxysm. Other authorities, and those who have paid very great attention in the study of typhus, aver that relapses, though exceedingly rare, do sometimes occur. Dr. Perry, of Glasgow, who writes respecting the epidemic of that city in 1831, says, "that out of 1145 cases there were 19 relapses, averaging 1 in 60." Dr. Henderson, from a careful record of 2,000 patients, confidently affirms that "cases in typhus no more relapse than do those of measles and smallpox." I am fully aware that a patient in typhus may, after the critical period has passed, suddenly become worse; the pulse may rise, the skin become hotter, &c. denoting an aggravation of existent symptoms, but then such can generally be traced to an obvious cause, which when discovered readily explains that which otherwise might seem mysterious, and be attributed to the *prima causa* nature of the disease, instead, as it should have been, to an adventitious circumstance. Errors in diet, a variable temperature, some moral calamity causing great mental disquietude, or any similar excitant applied either to the mind or body, would be fully calculated to produce an aggravated state of the disease, but not a repetition of it. An inflammatory condition of some vital organ may supervene during convalescence, which would most likely be attended with a considerable addition of constitutional disturbance; there would, of course, be an accompaniment of syptomatic fever proportionate to the degree of local inflammation, yet, this,

however difficult it might be to discriminate between the two febrile types, viz. the idiopathic and symptomatic forms, would be a phenomenon referable to a topical cause, and not a relapse according to the general acceptation of that term. In my own humble opinion there are cogent reasons for believing that genuine typhus does not relapse, especially cases of eruptive typhus, which is the most unequivocal of all forms of that disease, and there is little doubt that those aggravated states, commonly termed relapses, are nothing more than conditions attributable to the above mentioned causes. In the seven days' fever, however, there were positive and negative facts demonstratively shewing that indisputable relapses did take place, and the febrile paroxysms were repeated often to the second or third, occasionally to the fourth, and in some rare instances even to the fifth time, and these occurring without any exciting cause being applied. There was an alternation of febrile and non-febrile states, constituting from one to five distinct febrile paroxysms, and the last pyrexial attack seemed as veritably to proceed *ex primis causis* as the first; because the train of phenomena characterising the succeeding pyrexial states differed not in the essential particulars, because no precautions seemed to have any influence in preventing their return, because those returns observed a regular periodicity, viewing them to be the natural and spontaneous operations of the disease, and because they continued with unimportant variation from the commencement to the close of the epidemic visitation. From an attentive observation of the seven days' fever, from the beginning to its entire termination, the first febrile period was the most regular as well as the longest in its duration. The succeeding attacks were not so protracted, but with regard to the degree of intensity there was little difference between them. The febrile paroxysm succeeding the first intermission varied from a few hours to a few days; for the most part, however, it would continue from forty to fifty hours, when a powerful sweat resolved the fever as quickly and effectually as it had done the first attack. An intermission again was manifest, which, with rigors, hot skin, quick pulse, &c. foretold the accession of another relapse. This disposition to alternately recur and subside shewed that the fever possessed peculiarities somewhat resembling the true intermittent type: again, it will be seen by the tabular forms from time to time given in these papers, that the relapses were most frequent during the autumnal months, a period particularly associated with and accounted as favourable to the development of the intermittent fever, although, as above stated, the patients relapsed to the very termination of the epidemic. Some of the hospital physicians at the first attributed those returns to dietetic causes, and consequently observed the most scrupulous precautions, but apparently without the least effect, as they relapsed, not mattering whatever diet they were ordered. Several patients under my own care continued the low diet longer than usual, with a view to the prevention of a return, but this, and similar plans, I was induced to abandon, from a conviction that such were quite ineffectual.

According to Dr. Christison and others, the fever of 1817-20 very commonly relapsed, and the average mentioned was one to five of the whole number, as deduced from the reports of the hospitals. My own statistics give the exact proportions taken at various times as follows:—In Table No. IV. (Sept. 1843), out of 330 cases 167, being 1 in 1·97, had one relapse; 29, or 1 in 11·38, had two relapses; 5, or 1 in 66, had three, and 1 had four relapses, giving in the aggregate 202 out of 330 that had one or more relapses. In Table No. V. (Oct. 1843), 72 out of 80 patients, being 1 in 1·11, relapsed one or more times. In Table No. VI. (Jan. 1844), out of 450 cases, 231, or 1 in 1·95, had one relapse, being about 10 out of every 19½; 14, or 1 in 32·14, two relapses; 2, or 1 in 225, three relapses; hence in the aggregate of this number 247, being 1 in 1·82, or about four out of nine, relapsed. In Table No. VII. (from Nov. 1843 to Jan. 1844), 38 out of the 40 cases there reported relapsed, being 1 in 1·1006. In Table No. VIII. (April 1844), out of 80 patients, 40 had one relapse, being 1 in 2, and 4 had two relapses, being 1 in 20. From the above 980 cases, the following are the results:—viz. 603 had one or more

relapses, being 1 in 1·62; 67, being 1 in 14·6, two relapses; 9 had three, being 1 in 108·88, and one patient had four relapses. There were one or two other instances in which the patients had five separate and distinct attacks. From a general view of the foregoing facts it is proved that not less than two-thirds relapsed before leaving the hospitals; and when we consider that many might have a return after their discharge, it would be no exaggeration to state confidently that three-fourths relapsed: some physicians at the time felt assured that those returns were of universal occurrence, if only the patient's malady could have been seen and watched from the very commencement until the disease had wholly subsided.

TABLE VIII.*

Males 35 = 1 in 2·28.
Females 45 = 1 in 1·77.

Residences:—		
Canongate	8 = 1 in	10·
Cowgate	7 = 1 in	11·42
Grassmarket	2 = 1 in	40·
High Street	12 = 1 in	6·66
Closes	13 = 1 in	6·153
Wynds	10 = 1 in	8·
Westport	4 = 1 in	20·
From other places	25 = 1 in	3·2
Mode of attack:—		
Rigors	65 = 1 in	1·23
Nausea or vomiting	56 = 1 in	1·42
Arthritic pains, or muscular pains	52 = 1 in	1·53
Predominating symptoms:—		
Head	54 = 1 in	1·5
Chest	10 = 1 in	8·
Abdomen:—		
Left hypochondrium	22 = 1 in	3·636
Right hypochondrium	12 = 1 in	6·66
Epigastrium	22 = 1 in	3·636
Delirium	7 = 1 in	11·42
Cough	18 = 1 in	4·44
Assigned cause:—		
Wet and cold	22 = 1 in	3·636
Contagion	31 = 1 in	2.68
None	28 = 1 in	2·85
Abstraction of blood:—		
General	4 = 1 in	20·
Local: Head	14 = 1 in	5·71
Local: Chest	7 = 1 in	11·42
Local: Abdomen	7 = 1 in	11·42
Yellow cases	2 = 1 in	40·
Relapses:—		
First	40 = 1 in	22·
Second	4 = 1 in	20·
Third	"	"
Fourth	"	"
Muscular or arthritic pains during convalescence	40 = 1 in	2·
Dysenteric affections	5 = 1 in	16·
Stimulants:—		
Wine	10 = 1 in	8·
Spirits	8 = 1 in	10·
Ale or porter	10 = 1 in	8·

* Compiled in April 1844.

It was the opinion of the renowned Sydenham, that as much attention should be paid as possible to the prevailing nature of an epidemic, in order that we may gain an accurate knowledge of its peculiarities, and thus be enabled to bring an efficient treatment to bear upon the disease: respecting the attack now treated of this doctrine is fully applicable, for having become sufficiently satisfied that the relapses were the spontaneous operations of the disease, there was less cause to fear, than if those periodical aggravations had been considered as more of a local character. Respecting what has been advanced above relative to the non-relapsing nature of real typhus, this opinion merits the serious consideration of the practitioner, because important results might proceed from the one or other way of thinking. Those who are disposed to conclude that relapses do occur in typhus will render themselves liable to the mistaking acute visceral inflammation for what they considered a mere relapse, and instead of the superadded affection being energetically combated, the insidious complication might be allowed to go on without much alarm to a fatal termination, when inspection would at once demonstrate the cause of that which had appeared unexpected.

9. — *The pulse might be extremely high, without causing any alarm as to the result of the case.*

The state of the pulse in fever is one of the most important considerations relative to this form of disease, and a very high pulse in typhus is mostly associated with other unwelcome symptoms. If its frequency should be great at the commencement of the attack, we may expect the case to become one of alarming character, as it always becomes more frequent as the disease progresses. In the seven days' fever facts very different were manifest, and a pulse which would have been, and justly, dreaded in typhus, caused little concern in the epi-

demic, constituting another peculiar feature in the history of this distemper. In typhus a pulse of 150 would lead us to the conclusion that the case was one fraught with much danger, and the accompanying physical signs would corroborate such an opinion. In the epidemic the degree of frequency had reached its maximum often by the fourth or fifth, but seldom later than the seventh day, while in typhus it is generally double that period before such takes place. At the commencement of typhus the pulse is often about 90 per minute;* an average deduced from eighty patients in the seven days' fever gave the mean frequency on admission as 98·1, and every succeeding day, until the crisis, it would increase in a ratio far exceeding that usually observed in the form of continued fever now mentioned. In some few instances it was so high as 170 or 180, and the patient recovered in the most satisfactory manner, nor was there any proportionate relation between the degree of severity of the other symptoms, and this unusual frequency, which, reasoning from my former experience in the phenomena of continued fever, one might have been led to expect. The sudden reduction of the pulse in the distemper now treated of, was quite unprecedented, and more resembled that which takes place in a pure intermittent than in a fever of the continued form, a few hours often producing as great a change as an equal number of days generally effect in typhus. This fact was noted at an early period of the epidemic, and all those physicians who were brought to the bed-sides of their patients had their attention directed to this unusual phenomenon. Three or four hours, or half that time, would suffice for its reduction, from being extremely high, to its natural standard, and with this sudden change in the heart's action the other febrile symptoms would rapidly decline, so that in an incredible period the patient would become in a positive apyrexial state. In typhus the pulse gradually becomes slower and of better strength, and it generally requires many days to restore it to its natural standard. If an equal number of epidemic and typhoid cases were selected, in each where the pulse was very high, the proportionate mortality of the latter would be immensely greater than the former. In confirmation of this assertion I will here quote from Dr. Henderson. "Among the cases of the epidemic fever of which I have preserved daily reports," says the Doctor, "and which ended on the fifth or the seventh day, amounting to fifty, I find nine in which the pulse exceeded 135, and of these *one* died; and among sixty-eight cases of typhus fever, not selected, of course, I find thirteen in which the pulse exceeded 134, and of these *five* died, giving a proportion in the one set of cases of a mortality, in connexion with an extreme frequency of the pulse, of about 11 per cent., in the other of about 38 per cent."* On a second comment on those data, Dr. Henderson says: "If we add four cases in which the pulse in the second paroxysm of the epidemic fever exceeded 135, to the nine previously noticed, we have a mortality in this disease connected with an extreme frequency of the pulse of 1 in 13, or less than 8 per cent." From what has now been said respecting the pulse in this disorder, it is quite manifest that the two descriptions of fever were dissimilar in one of the most essential diagnostic characteristics, there being no symptom upon which we place so much reliance as the heart's action. The subjoined case may here be quoted:—

CASE IX.—*Crisis 7th day—relapse 14th—high pulse, falls to the natural standard on the supervention of diaphoresis, which a second time resolves the disease.*

James Wilkie, æt. 24, single, complexion light, eyes blue, hair auburn, a stout muscular-looking man, and has been employed as a farm-servant. Admitted July 28th, 1843, labouring under an attack of the epidemic, which had been ushered in by the usual initiatory symptoms. States that his present indisposition commenced four days ago (24th), by a fit of shivering.

On admission, says that he did not sleep well last night. Countenance is rather flushed, has some tenderness over the hypochondriac and epigastric regions; skin hot and dry; breathing accelerated, but performed without

* Edin. Med. and Surg. Journal, Jan. 1844.

* Dr. Southwood Smith on Fever, p. 153.

pain; tongue moist, and is covered (except at the tip and edges), with a thick brownish yellow coat; bowels open; pulse 130, of good strength; urine passed in moderate quantity, which is high coloured.

Habeat statim Infus. Cathart. ℥iv.; Mist. Salin. Diaph. ℥viij.; cujus, ℥j. cap. 4ta q.q. horâ.

Cold cloths to be applied to the head, which is hot and feverish. To be sponged with tepid water. Ordered low diet.

July 30th.—Slept better last night, but is still much the same as yesterday. Pulse 128.

Medicamenta contr.

31st.—Sweat copiously this morning (7th day); pulse 80, of tolerable strength; slept pretty soundly since the sweat; is free from pain, and feels comfortable.

Mistura repetatur.

Aug. 1st.—Much the same as yesterday; skin moist; bowels open; urine passed copiously; complains of a slight pain in the chest, and has a little cough.

Habeat Linct. Opiat. Horâ somni capiendus Haust. c. Sol. Mur. Morph. gtt. xxx. in Aqua, ℥iss.

2d.—Cough not so troublesome, and says that he feels better. The case progressed in the most favourable manner until,

6th.—Had a fit of shivering this morning; much headache; skin hot and dry; tongue dry in centre; has a good deal of thirst; looks flushed in the face; is restless and uneasy; bowels not moved; urine high coloured and scanty; pulse risen to 120, of tolerable strength.

Hirudines viii. temporibus app. Mist. Salin. Diaph. Rep. Abradatur capalitum. Horâ somni haust. c. Sol. Mur. Morph. gtt. xxx. sumendus.

7th.—Had a tolerably quiet night, but did not sleep much; tongue dry; bowels open; urine voided nearly in normal quantity; head relieved by leeches; no cough, nor any pain in chest upon deep inspiration: pulse 120, rather weak and compressible.

Medicamenta Rep. Habeat Vin. Rub. ℥j. in die. Clothes immersed in cold water to be applied to the head, which, though much easier, is still hot to the touch.

8th.—Much about the same as yesterday.

Med. et Vin. Cont.

9th, *Mane.*—Skin dry and burning to the fingers; countenance flushed; tosses about in bed, and feels very restless; had slight epistaxis this morning; head rather easier; tongue dry; bowels open; excretions pretty natural in appearance; urine passed in somewhat insufficient quantity: pulse 150, small, and not of very good strength.

Visit at noon. — Has had a very copious sweat, and pulse is down to 72, which is of pretty good volume, and of better strength. All sense of uneasiness gone; feels quite composed, and expresses himself as much relieved within the last two hours.

Mist. et Vinum Rep. Haust. Sedativ ut ante, h. s. sumendus.

10th. — Continues free from pain; slept well; bowels open; pulse nearly natural; tongue cleaner, and generally moist.

11th. — Slept well; complains of some arthritic pains, especially in the right elbow and knees; in otherrespects progresses favourably.

Linimentum Saponis Co. ℥j. parti aff. app. bis tervedie. Vinum cont. Ordered common diet.

12th.—Continues to improve; rheumatic pains said to have been relieved by liniment; excretions voided normally.

Vinum Cont. Haustus Morph. ut. ante, h. s. s.

13th.—Progresses favourably.

To have steak diet. Vinum, ℥iij. tantum in die. Bibat Cerevisia, Oj. in die.

15th.—Goes on well.

16th.—Improves.

Vinum omittatur.

17th.—Improves.

26th.—Dismissed as cured.

Remarks.—On examining the details of this individual's illness an example is given illustrative of what has been asserted above. On the morning of the seventh day, during the first attack, the pulse had become reduced to 80, after a powerful sweat, although, on the previous day, it was so high as 128. The critical sweat was succeeded by a tranquil sleep of some hours' duration, after which he was free from pain, and in every respect

favourable; the secretions becoming more regular, and every indication of a speedy convalescence being manifest. Five days subsequent to this crisis the relapse set in, which, as usual, was characterised by a close repetition of the primary symptoms. The skin became hot, with other indications of the febrile state, and in the course of two or three days the pulse had risen to 150 per minute, accompanied with much general disturbance. I remember the particulars of this man's case perfectly, and also the surprise which I then felt on seeing such a very sudden transition from one condition to another. On going round the wards to see the patients in those beds belonging to the physician to whom I was attached, the nurse directed my attention to Wilkie, who then seemed very restless, and complained of some pain over the os frontis; the head felt hot, and a cold application was ordered to be applied, which gave him some relief. I saw him again when the physician made his visit, which was not more than an hour and a half afterwards. He was now literally bathed in perspiration, the skin had become cool, he felt as mentioned in the report "quite composed;" the pulse, from being 150, small, and rather weak, was now reduced to its natural standard, of decidedly better volume, and of somewhat improved strength. His state was non-febrile. Thus, a space of less than two hours produced a veritable change, almost as great as that which we observe in typhus in a couple of weeks. What might have been anticipated as the result in typhus, with a pulse 150, and so copious a sweat? Certainly not the favourable condition which ensued in the instance of this man, but rather that spoken of in the foot-note relative to Mrs. S. in paper No. VI.; viz. a mortal termination. From this time Wilkie progressed as well as could be desired, and was dismissed the hospital a fortnight from the last crisis. Many other cases, exemplifying the same peculiarity, came under my notice, but, as a repetition of examples would not only be useless, but trespass too much on the pages of the journal which has done me the honour of publishing these papers, I shall confine myself as much as possible to a brief illustration of points at issue.

X.—*The tongue was generally covered (except at apex and edges) with a thick pasty, dirtyish, yellow white-looking coat, mostly moist: at least, seldom so dry as we frequently observe it in genuine typhus.*

The state of the tongue in febrile diseases has always been regarded with the greatest attention; nor is there any symptom, with the exception of the pulse, upon which we place more reliance: it affords correct information respecting the secretions and the degree of disorder induced in the system by excessive circulatory action,—considerations of paramount importance in guiding our treatment of this class of disease. In the seven days' fever, it presented an appearance very different from that usually noticed in typhus and the other forms of continued fever common to this country: indeed, so striking was this particular feature of the distemper, that all who saw much of the epidemic concurred in considering its condition as one of the many peculiarities which gave a distinctive character to the affection. In typhus, the tongue at an early period assumes a brownish hue, feels dry and roughish to the touch, becoming darker and more parched as the disease progresses; there is a want of natural moisture in the adjacent parts, and the teeth often become covered with sordes. In the epidemic, the mouth was unusually moist, and the tongue well nigh always loaded with the fur as described above; the latter indicating that the gastro-mucous membrane was much affected. This coat was the thickest, and also of a darker hue, sometimes being of a brownish yellow towards the posterior part, and two or three deep irregular longitudinal fissures were frequently present. The tip and edges, as stated, were for the most part clean,—often preternaturally so, exhibiting a rose-red or crimson tint, in this particular in some measure agreeing with the accounts given by Jackson, Thompson, Gillkrest, and others, who have recorded the yellow fever. In the jaundiced cases, as may be anticipated, the fur was of a far deeper yellow. During the two or three days preceding the crisis it would become dry; but as soon as the critical sweat supervened, it quickly became moist, and the thick pasty coat rapidly disappeared. On

the setting in of the relapse, the fur was readily again present, manifesting little, if any, dissimilarity to the appearance noticed in the first attack, until the crisis, as before, restored the organ to a more natural state.

XI.—*Pregnant women at all periods of gestation invariably aborted, or were prematurely delivered.*

So invariably did miscarriage and premature delivery take place, that throughout the whole duration of the epidemic, — a period extending over at least fourteen or fifteen months, —I never discovered even a solitary instance of the impregnated uterus not expelling its contents; and the statements of others, whose experience in the fever was as ample, bore testimony to the same. In Glasgow, Paisley, Dundee, Aberdeen, and other of the large towns in Scotland, the same fact in those places equally obtained. The date of conception seemed to exert little, if any, influence in forming a prevention, abortions and premature deliveries, strictly so called, being equally common. No positive data being arrived at as to the true cause of this occurrence, any remarks now advanced can be but those of theory or conjecture. All causes which heighten the circulation tend to endanger the expulsion of the ovum, because a greater amount of blood being sent, and with an increase of propulsive power, to the uterine sinuses, extravasation is apt to take place between the uterus and placenta, which has the effect of disuniting the latter from the former, and thus the embryo and its involucra acting as a foreign body, induce contraction of the parietes, and their consequent expulsion. The increased action of the heart in fever, and especially in the distemper now treated of, in which the circulation was so unusually high, would, from what has been said, undoubtedly tend to produce the result described; yet, when we consider that a healthy ovum powerfully adheres to the uterine walls, and is not easily displaced,—that the peculiarity mentioned was universal, not merely occasional, in its occurrence,—and that, from conclusions subsequently to be deduced, it rather seemed owing to some common cause than incidental circumstances,—it would be difficult, then, to ascribe the cause of expulsion solely to an increased action in the circulating system. Pursuing this question, it may be said, that the proximate causes of premature expulsion of the uterine contents are divisible into three classes: 1st, those which affect the uterus alone; 2d, when there is disease of the fœtal appendages; 3d, the cause may be entirely restricted to the embryo or fœtus itself.

1. A morbid condition in the great nervous centres will produce spasmodic action and contractile power in the uterine parietes, and such may be sufficient to cause the organ to expel its contents. Ergot of rye has its physiological action by affecting the cerebro-spinal system, and thus conveying its effects to the uterus, which is then excited to contractile efforts It is not wholly improbable to suppose that the specific poison of a fever might produce some occult effect upon the brain and spinal marrow so as to be followed by results somewhat analogous to the agent mentioned, viz. to excite contractile action in the organ in question. In fever, the cerebro-spinal system forms the primary seat of disorder; and those morbid changes which take place in the circulation, and the phenomena consequent upon such alterations, are referable to a perverted condition of nervous power; hence it may readily be conceived that such an amount of anormal action might be induced as to produce the result considered.

2. Diseases of the fœtal appendages sometimes produce abortion or premature delivery; but, as these are only occasional occurrences, and generally the results of gradual organic change or peculiarity of structure, it becomes untenable to suppose that such constituted the cause of the peculiarity now mentioned.

3. There are good reasons for believing that the abortions and premature deliveries now spoken of were attributable to morbid action being produced in the embryotic or fœtal being, which destroyed its vitality, and thus rendered it subject to the operation of those laws in the animal economy necessary for the expulsion of a foreign body. It is previously said, that the blood was highly venoid, and that the bile morbidly circulated in the vital fluid; and below it is shewn that the poisonous product,

urea, in many instances existed abundantly in the blood, which could not fail to exert a noxious influence upon the delicate and susceptible new being. This vitiated state of the blood, then, depending upon urea and cholesterine, together with being highly venoid, would form a common cause to the occurrence considered amply sufficient, and one that seems much more probable than the conjectures spoken of above.

When it is remembered that these abortions and premature deliveries invariably took place without even a single exception,—that in the advanced stages of pregnancy the child was always born dead,—and that no precautions or remedial measures seemed to have any power in averting this remarkable tendency of the uterus to expel its contents,—the only rational inference to be arrived at is, that a common cause existed in the system calculated to destroy the new being, and that this cause consisted in the presence of noxious agents in the maternal circulation.

There were several instances of pregnant women being in the hospitals at the time of the epidemic who were lying in genuine typhus. These, however, did not manifest any disposition to miscarry, like the gravid patients in the seven days' fever: indeed, I do not at this moment remember any case where a typhus patient miscarried; and, if such did occur, those cases were very rare, when compared with those labouring under the epidemic. In some instances of premature deliveries that came under my notice, there seemed to be a tonic action in the uterus, the orifice being sometimes so spasmodically contracted that it was with great difficulty the secundines could be removed. In certain cases I had to dilate the os uteri with the fingers for some time before the placenta could be withdrawn, and occasionally in instances where there had been considerable hæmorrhage. In one woman this was particularly the case; the hæmorrhage had proceeded to a great amount before I arrived at the ward; a fœtus of about the sixth month was lying in a pool of blood; the secundines had not come away, and the os uteri was spasmodically closed; and it was not until after a considerable time that the orifice could be so far dilated as to admit of removing the placenta. Dr. Alison mentions two cases of premature deliveries, in both of which the child was born dead, and in each there was considerable hæmorrhage, although the uterus contracted well.

XII.—*The kidneys were often the seat of diseased action; and, in some instances, death appeared to be induced by the absorption of urea, which was discovered in the serum infiltrated into the ventricles of the brain; and this product was also found in the blood, both during life and after death.*

No branch of pathology has made greater advances than that respecting the kidneys; and, when we consider what an important office these organs perform in the animal economy,—how liable they are to become affected in febrile diseases, and what serious results proceed from an impairment of their proper functional power,—it is, then, not surprising that so much attention has been directed to the subject. In scarlatina, their affection has been thoroughly investigated, and, consequently, thrown much light upon the treatment of that disease; but renal complication in other forms of fever, especially in typhus, has not met with so much research, partly, perhaps, on account of morbid action in these organs being less suspected than more precise and careful observation would seem to warrant; hence it becomes important, if possible, to shew that the kidneys, in fever of the continued form, are liable to take on a diseased action, and occasionally constitute the proximate cause of the most alarming symptoms.

An obstruction in the sudoriparous organs, which necessarily gives rise to a great increase of action in the kidneys, and, if continued, disorder of function and change of structure in these organs, is the manner in which scarlatinal dropsy is induced, and when it is recollected that it is at the extreme circulation where the grand phenomena of fever are located, in the various forms of continued fever as well as the exanthems; that during the febrile paroxysm the cutaneous tissue is in a great measure deprived of its natural excreting functions; that it is at the capillaries where the great processes of secretion, excretion

and assimilation are performed; that the evolution of effete matters, which are constantly produced by waste of the various tissues, is always carried on in an increased degree in fever, and that the kidneys are the organs by which such effete matters are conveyed from the system, it may readily be imagined how liable these organs will be to become affected, and what additional disturbance there would be created on a cessation of their proper functions by which the noxious effete matters would be retained, and the deleterious particles that ought to be removed, carried into the circulation. In typhus, the decay and diminution of structure generally proceeds to a great extent, which is dependent upon excessive oxygenization, which diminishes the tissues, and thus produces an abundance of nitrogenised effete matters, which matters are mainly carried off by these organs. The skin, as it is seen, losing much of its proper excretional functions, a greater quantity of blood is determined to the kidneys, which has the effect of stimulating them to an excess of action, and this excess of action is soon followed by a loss of functional power, and a congested state of the Malpighian and portal plexuses, superadded to which might be organic nervous disorder from primary irritation in the cerebro-spinal system; hence, the skin and kidneys in a great measure ceasing to perform their proper offices, the blood must then necessarily become inquinated from the retention of azotised matters, and which if retained to a considerable degree, act with all the evil effects of a narcotic poison. The skin during health evolves a considerable quantity of nitrogen, but an excess of action on the part of the kidneys, so long as such continues, will counterbalance the loss of functional power in the former, and thus preserve the equilibrium of function in the system; hence, if an increase of action in some organ or organs does not compensate for a diminution of action in some other, general disturbance in the system must result. The great disorder in the nervous and organic nervous systems in fever often prevents the counteracting properties which nature would otherwise supply; and it is thus, in fever, that the kidneys, from a vitiated state of the cerebro-spinal system, and consequent loss of organic nervous energy, fail to counteract the evils engendered by impairment of function in the sudoriparous organs: at least, such is a potent cause in addition to those before mentioned. The practitioner should not be satisfied, and deem that because the quantity of urine voided is normal, that the kidneys rightly perform their office, as their excernent functions may be seriously disordered notwithstanding the usual amount of fluid being given off. In the commencement of Bright's disease, there is often no diminution in the quantity of urine, yet the solids are retained: this is now mentioned, because in some cases of the epidemic, ureal symptoms were manifest where there was not a corresponding decrease of the excretion. Nitrogen being the chief constituent of urea (according to Berzelius not less than 46 per cent), it is plausible to presume that where azotised effete matters are abundantly formed and retained in the circulation, owing to the phenomena of fever above noticed, this product will rapidly accumulate, and in proportion to its accumulation will be observed those effects upon the body acknowledged as producible by this salt. In the seven days' fever, the symptoms of urea morbidly circulating in the blood, were first noticed by Dr. Henderson, and soon afterwards by Dr. Cormack and others. An analysis of the blood and also of the serum infiltrated into the ventricles of the brain showed the crystals of this salt in great abundance. In some patients there were good reasons for believing that urea was formed in the system with unusual rapidity, so much so as to lead to the opinion that a peculiar tendency to its generation existed. Liebig says, that urea is formed according to the degree of action going on in the system, — a statement which, if universally applied, has been denied by Andral, Becquerel, and Golding Bird. If, however, the theory of Liebig be correct, and considering that the circulation was unusually high in the epidemic, we may thus in some manner be enabled to account for the production of this product in the seven days' fever. The symptoms of the accumulation of urea were mostly noticed after the crisis, during the non-febrile state. This might be dependent upon some short

time being required for its accumulation, and it might not be generated in any important quantity until at or near the crisis: again, as has been observed*, the intense action of the skin at the time of the critical sweat might so affect the sudoriparous organs as to throw a greater amount of blood to the kidneys. There is little doubt that in some instances in which the patients were reported to have died from jaundice, that had a careful inquiry been instituted as to the action of the kidneys, it would have been shown that the proximate cause of death rather existed in the impaired state of these organs; and certainly these complications were not unfrequently co-existent. We are aware that the accumulation of urea is particularly prone to create inflammation of the serous membranes, especially in the arachnoid pleura and pericardium, yet although these affections were sometimes noticed, I am not prepared to say in what precise proportion they took place. In some of the worst cases, where ureal symptoms were present, it was quite obvious that the nervous system was labouring under some powerful depressant; the pupils became small and piercing, the extremities and surface generally of a lower temperature, the breathing quick, the heart's action enfeebled, and the intellectual faculties impaired: in fine, presenting all the appearance of narcotism. Powerful diaphoretics, in conjunction with stimulants, constituted the best remedial measures, and apparently confirmed the diagnosis. The instance of Janet Thompson may here be cited:—

Case X.—*Urea found in the blood.*

Janet Thompson, æt. 24, single; resides in Leith. Admitted March 12th, 1844. A stout plethoric young woman. States that she was seized with rigors on the 7th, which were accompanied with pain in the head, limbs, and over lumbar region. Previous to the shivering, had felt indisposed for two or three days, but only slightly; had been in no communication with fever patients, but in the house from whence she came several persons had been ill in fever, though this was some time previously.

March 13th.—Sweated a good deal last night, and is now perspiring freely. Does not think that she has sweated so much before during her illness. Pulse 80, soft, of tolerable volume. Pain in head, which was so severe yesterday, has entirely gone. Complains of some stiffness in the arm and shoulder. Bowels opened from medicine taken last night. Tongue moist, but furred. Has not passed any urine since her admission (yesterday). No distension over hypogastrium, nor dulness on percussion. Feels heavy and drowsy, every now and then falling to sleep and waking in a short time with a start, and feeling (as she expresses it) as if she were falling out of bed. Some dizziness and indistinctness of vision, with a feeling of heaviness over the eyes. No confusion in the mental powers, as she intelligibly answers every question made respecting her present condition, but cannot exactly state some of her previous symptoms. —℞ Nitratis Potassæ, ʒij.; Liq. Ammon. Acet. ℥iij.; Aquæ, ℥v. Sit. Mist. cap. ʒj. 4ta. q. q. horâ.

14th.—Pulse 80, very irregular in its beats. Began to pass water yesterday in an hour and a half after first dose of medicine. At 7 o'clock P.M., had made 6 or 8 ounces of high-coloured urine: the whole quantity for 24 hours is 34 ounces. Has sweated a good deal since yesterday. Feels much lighter, and the uneasiness in head is gone.—Medicament. Cont.

15th.—Had slight shivering this morning; skin hot and dry; pulse 88. Urine 24 ozs.; sp. gr. 1024.

There is here an omission for some days as to the state of her case, and the next report is dated

22d.—Pulse 120; skin hot; has an oppressed look; no stool to-day, but bowels were opened freely yesterday. No headache.—Mist. c. Nit. Potass. et Liq. Ammon. Acet. Rep.

24th.—Pulse 120, of fair strength; skin hot and dry; countenance has much of a sottish expression; pupils pretty large and equal; no decided difference between the two sides of the face when features are at rest, but a very apparent obliquity of the mouth, and protrusion of the tongue to the right side when desired to put it out, the left angle of the mouth being drawn out at the same time. On speaking, left side of mouth alone

* Edin. Med. and Surg. Journal, Jan. 1844.

moves. She is not insensible, but her intelligence is obscure. Moves her right arm freely enough, but cannot squeeze with it so thoroughly as the left. There is a bright red patch, and a series of others downwards on the epigastrium and abdomen; a pale-coloured spot occupies the centre of the largest, and a similar one exists at carpal extremity of the left thumb. There is a superficial slough on left heel, and an ecchymosed spot on right instep; tongue dry; urine passed in small quantity.—Abradat. Capalitium. —℞ Pulv. Nit. Potassæ ʒiss.; Aquæ ℥x. Sit. Mist. Cap. ℥j. 2da. q. q. horâ.

25th.—Pulse 116, of good strength. The hemiplegia remains as before; tongue dry; had several stools. Urine abundant, but not kept. On the left foot the upper surface of little toe is occupied by a small bulla of blood; another between that toe and the next. The spots on the epigastrium are not so large; that on the right thumb is converted into a straw-coloured bulla. Intelligence, pupils, &c. as before.—Mist. Cont.

26th.—Pulse 104, of good strength; right cheek as before; right pupil smaller than left, but not contracted; tongue dry, but clean; pus in the bulla of the thumb; the largest bulla on left foot has emptied itself of blood, and the part is healthy below. The vibices are improving. Passes a sufficient quantity of urine.—Habeat. Pulv. Jalap Co. ʒj.; Mist. Cont.

27th.—Was observed in the morning in a state of stupor, being incapable of observing or replying. Was ordered by Dr. Craigie's clerk to be cupped about an hour ago. Pulse, at present, 150, very feeble. Is incapable of comprehending or replying to questions. The right pupil is considerably dilated; no effect is produced on the eyelid on thrusting the hand towards the eye; left pupil is smaller, not so contracted, and she winks on thrusting the finger towards the eye; even irritation of the conjunctiva produces but little effect on the right side; no motion of the right arm is produced by irritating it, and it is quite in a state of resolution; pricking it, however, produces an expression of pain. Above the inner condyle of the right femur, and below the inner aspect of the left knee, parts which are said to have been lying in contact, there are spots of corresponding size, of two inches long by an inch and a quarter broad, consisting of red discolouration, containing a deep purple one nearly two-thirds of the size of the whole spot; around the redness there is a halo of a lemon colour; a scaly eruption of sudamina on the belly. A large bulla, containing apparently blood, has formed on the outside of the left foot. Urine passed in bed, quantity of which cannot be accurately ascertained.—Habeat. Sp. Communis. ℥iij. Cap. ℥j. in aquâ cald. omni secund. horâ.

28th.—Died last night at 11 o'clock.

Remarks.—Infection seems to have given rise to her fever. On the sixth day of her illness there was some suppression of urine, which showed its effects in the cerebral symptoms, as noticed in the report. The next day (after the administration of pretty large diuretics), when the secretion of the kidneys was restored, the drowsiness and indistinctness of vision were removed. In the report of the 24th inst., and the seventeenth day from the commencement of her first attack, it is very evident that a serious affection of the brain existed, and there was partial suppression of urine; the diuretic medicine was again given, and although the kidneys were brought into action, yet the lesion which had evidently taken place in the head was in no degree removed. On the morning of the 27th, the preludes to dissolution were indisputably present: the urine was voided in decreased quantity, the sensifie nervous power in the affected side in a great manner lost, the intellect obscured, and other indications foretold the near approach of a fatal issue. The vibices and bullæ spoken of in this case were, perhaps, in a great degree dependent upon the circulation of urea, because this salt, by uniting with the elementary principles of water, is transformed into the carbonate of ammonia, which has the power of dissolving the fibrin of the blood, and thus rendering hæmorrhagic effusions, transudations, &c., liable to occur. My friend, Dr. Michael Taylor, analysed the blood taken by cupping, and discovered crystals of urea in considerable abundance. The post-mortem examination shewed an anormal quantity of serous exudation in the ventricular cavities of the brain.

When it is considered how great is the ambiguity which mystifies the fundamental pathology of fever, it becomes exceedingly interesting when the proximate cause of death is so fully understood as in the case above. Yet, on the other hand, there were instances occurred in which a fatal termination ensued without any explicable cause being observable to elucidate the mode in which death had been produced. The next case is one in which the patient died without any cognizable lesion calculated to arrest the vital functions being discernible.

CASE XI.—*On dissection, no lesion to account for death.*

Mrs. M'Powrie, æt. 50, married: from 50, Blackfriars Wynd; accommodation pretty good. Admitted Sept. 25th, 1843.

Has for some years past been of intemperate habits; volume of flesh rather spare; colour of skin natural; countenance febrile-looking, and eyes slightly suffused. About three weeks previous to admission, was somewhat indisposed for a few days, but subsequently recovered. On the 16th inst. was taken ill with general muscular pains, headache, shiverings, sickness, &c., which were followed by floodings and slight sweating. Since that time has continued to experience a continuance of her pains. Cause assigned was contagion. On entering the hospital, the symptoms were as follows:—Pulse 60, of moderate strength, and regular; tongue covered with a whitish fur; bowels opened by medicine; temperature natural; no exhalation nor cutaneous eruption; slept well the previous night from a dose of muriate of morphia. In the morning the headache had greatly subsided, and the intellect was clear and collected. Still complains of great pain, and muscular power much enfeebled. Has some abdominal and epigastric tenderness upon pressure.—Mist. Salin. Diaph. ℥viij.; Cap. ℥j. 4ta q. q. horâ.

26th.—Pulse 80; temperature moderate; epigastric tenderness still considerable; complains of general pains and headache.

27th.—Much the same to-day.

28th.—Passed a tolerably easy night; bowels open; no sweating; still has pains, and is much debilitated; tongue brown and inclined to dryness; pulse 100; skin hot; epigastric tenderness considerable. Ordered the following:—℞ Vini Ipecac., Vini Ant. Tart. aa. ℥ij.; Sol. Mur. Morph. ℥iss.; Aquæ ℥ij. Sit. Mist. cap. statim. quart. partem et rep. omni quarta horâ.

29th.—Yesterday evening, 7 o'clock, she very suddenly sunk into an exhausted condition, being unable to move as previously; at the same time the surface (especially on the lower extremities) became cold; pulse 100, extremely weak. Wine was immediately administered, half an ounce being given every half hour. At midnight, little or no improvement having taken place, the quantity was increased, and some whiskey given. At 5 o'clock in the morning the pulse was found improved, and the skin had become generally warmer and more natural. She had now taken eight ounces of wine and one of whiskey. The mixture was omitted last evening. Was restless this morning, being wandering and uncollected; tried several times to get out of bed. She now (visit at noon) lies on her side in a dull and exhausted condition, moaning occasionally as if expressive of pain; slumbers a little, but is easily awoke, and answers any question collected and rationally; pupils natural; tongue moist, dark in the centre; temperature moderate, but inclined to be chilly; pulse 122, soft, but of rather better strength than last night. There are, irregularly scattered over the body, dark, circumscribed, persistent patches. Wine to be continued.

30th.—Restless last night, when gt. xxx. Sol. Mur. Morph. were given, after which she slept until 3 A.M. Had no wine during that time; afterwards the stimulants were regularly given. Bowels opened by an injection this morning. She now lies in an exhausted condition, with the eyes half open, and apparently in a distressed state, being somewhat restless, moans, and the trachial râle is heard; gives some utterance in indistinct and inarticulate muttering. Is roused with difficulty, but appears to understand what is said, answering simple questions, though with exertion, then she soon relapses into her wonted state of dejection; eyes clear; pupils natural, but somewhat fixed, and there is a good deal of ramiform injection of conjunctiva. Protrudes the tongue readily,

which is thickly coated with a yellowish fur, but moist. Temperature of surface elevated; hands and feet cold; pulse 120, compressible.—℞ Sol. Mur. Morph. ʒij.; Mist. Camph. ʒvi.; Sit. Mist. Cap. ʒj. 4ta q. q. hora. Hot bottles to be applied to the feet.

Oct. 1.—Continued to sink, and died last night.

Sectio Cadaveris.

Head.—Brain presents much about the natural appearance; no effusion into the ventricles, nor any softening or injection.

Thorax.—Lungs much loaded, yielding, on pressure, a copious flow of frothy serum, mixed with blood; crepitant pretty generally; both lungs are attached by old adhesions to the pleura costalis, especially the right lobe, which was very voluminous. Heart natural.

Abdomen.—Liver healthy, weighs 2 lb. 6 oz.; bile thin. Spleen rather soft, somewhat congested; weighs 6 oz.; otherwise of natural appearance. Kidneys, stomach, intestines, and other parts, quite healthy.

Remarks.—This woman's case affords a good example of what we occasionally see in fever, viz. a gradual and irremediable declension of vital power; a sinking of nature which no efforts can obviate. The sudden manner in which she lapsed into a state of exhaustion, as well as the symptoms which then were ushered in, suggest that the brain was the seat of lesion; the post-mortem appearances, however, gave no acknowledged evidence as to the true cause of death. A sudden sinking of this description occasionally occurs in fever patients, after the disease has reached its acme, and all danger seems past. Two instances I particularly remember of what is now stated. These were in the persons of two females under the care of the late Dr. Graham. They came into the hospital in the epidemic fever, and passed through the disease in the ordinary manner, and had so far improved as to be placed upon a better diet. They both died suddenly during the night, sinking as if from a general failure of action in the vital organs, nor did the inspections throw any light upon the real cause of such unexpected terminations. In convalescents from typhus I have known the same occur, and Dr. Graham then informed me that, during the many years of his practice, he could call to mind many similar instances in which fever patients had died in this unaccountable manner.

XIII.—*Muscular and arthritic pains were exceedingly common during convalescence.*

The brief observations to be made upon this head might, perhaps, with more propriety, have been placed under the sequelæ, but as the pains in question were experienced during the febrile paroxysm, as well as in convalescence, and as this peculiarity formed a striking feature in the pathology, the fact is here noticed. At the first the affection was attributed to changes of temperature or peculiarities in the weather, but as the patients complained the same of those pains when they had not been removed into another ward, at all seasons and under all varieties of the atmosphere, it was obvious that the cause was referrible to the disease, and not to extrinsic influences. Sometimes the larger joints, especially the knees and elbows, were so considerably affected, and the muscular pains so severe, as to demand a somewhat active treatment; in the generality of cases, however, these pains called for little if any remedial measures, and as the patient recovered his strength they gradually decreased. When complained of during the paroxysm of the fever the severer cases seemed to resemble acute rheumatism, but the redness and swelling so common in rheumatic fever were not present. Dr. Walsh, in his work previously alluded to, notices the same fact as being common in the epidemic of 1817-20. "A very common symptom," says that author, "occurring sometimes in the disease, but oftener during convalescence, was rheumatic pains of the joints, which occasioned considerable annoyance to the patients, and was removed with difficulty."* Dr. Cormack says that he "found arthritic and general pains in jaundiced cases most severe, an observation worth regarding, from the connexion which subsists between jaundice and rheumatism, as has been particularly ad-

* Welsh, On Bloodletting in Fever, p. 18.

verted to by Dr. Graves." Gillkrist, Moreno, and certain other writers on the yellow fever, mention pains of a similar description taking place in patients labouring under, and recently passed through, that disease. Probably the most plausible supposition respecting the cause of these pains would be to refer them to an inquinated state of the blood, arising from impairment of function in the renal and sudoriparous organs, thus vitiating the vital fluid by the non-removal of these noxious particles from the circulation, which are produced from the nitrogenised effète matters, so abundantly evolved during the progress of fever, as before mentioned, and which during health are conveyed from the system by their natural excretory channels. In Table No. VI., out of 450 cases, 375, being 1 in 1·2, or 5 cases out of 6, had those pains during the febrile paroxysm or convalescence, but most especially in the latter. In Table No. VII. out of 40 cases, 23 or 1 in 1·73 were thus affected; and in Table No. VIII. out of 80 cases, 40, or 1 in 2, had the same during convalescence.

XIV.—*A peculiar form of ophthalmitis not unfrequently supervened during convalescence.* (See Sequelæ.)

XV.—*The mortality was very small.*

The mortalities of fever vary according to the particular type of the epidemic, the season of the year, the class of people with whom it is chiefly restricted, together with innumerable other moral and physical influences by which the results are importantly modified. In the pestiferous localities of cities and large towns, where the lower orders are, from a multitude of circumstances, particularly prone to disease, there the deaths are always greater, notwithstanding the essential characters of the distemper being identically the same. This fact has long been particularly noticed in Edinburgh, where epidemic visitations of fever, from time immemorial, have been so common, and where there is such a manifest difference between the wretched poor of the old town and the respectable inhabitants of the new. In Glasgow, Dundee, and other places, the same observation might with equal aptness be applied, and it is deeply to be regretted that such an infinitude of circumstances are in operation in the large towns of Scotland, which not only propagate disease, but fearfully swell the bills of mortality. The average mortality of the epidemic of 1817-20 was 1 in 25 or 30; in that of 1826-7, 1 in 10·33; in 1837, 1 in 10; and in that of 1838 it was so high as 1 in 6·27. All these visitations, except the former, were of a strictly typhoid nature. In the yellow fever, to which disease some physicians said the epidemic of 1843-44 bore a great resemblance, or was a modification of, the mortality is sometimes so frightfully high that the recoveries form but mere fractional exceptions. At Barcelona, in 1821, nineteen out of twenty perished, and at Murcia in 1804, out of 134 cases there treated, not more than three or four recovered; and in this appalling affection it has often happened that two-thirds of those who took it have been swept off! From the great difference which there is in this respect alone between the Scotch and true yellow fever, it is impossible to conclude that the former was in its essential nature like the latter. In the seven days' fever, according to the tabular forms which have been given, the average was 1 in 20. Dr. Cormack's cases averaged 1 in 16½.

Post-mortem appearances.—The essential nature of fever, as hath been previously observed, still being involved in much obscurity, every means whereby correct conclusions are likely to be arrived at should be carefully pursued; and none, perhaps, are so well calculated to ensure this desideratum as a diligent observance of the lesions discoverable after death. These lesions, however, are frequently so various in their character, so differently located, of all degrees of intensity, and sometimes even seem not at all to exist, or where they do, appear unimportant, and not calculated to arrest the natural actions of the vital organs; or it may be, are not cognizable in the present state of our knowledge: hence it is that the study of morbid parts in fever has not been attended with those satisfactory results which have proceeded from this mode of investigation relative to other diseases. It is before stated, that, whatever the fundamental nature of fever may be, it has a particular proneness during its course to institute

the inflammatory state; this, it is most probable, depending upon an impairment in the nervous and organic nervous influence proper to those parts in which the inflammatory process is discovered, which, by producing derangement in the circulatory function, would be followed by the sequent train of inflammatory phenomena: hence, as before insisted, the lesions to be witnessed in fever are rather to be regarded as complications or results of a primary morbid state, than conditions constituting a first cause to the symptoms manifested. In different countries the fever of the continued form now in question presents lesions in certain parts more than others; and different epidemics, even in the same locality, rarely, if ever, are marked by precisely similar post-mortem appearances—a circumstance which, amid other considerations, argues in favour of the supposition, that the specific poisons essentially vary.

The deaths which occurred in the seven days' fever were by far most frequent in those instances of jaundiced complication; nevertheless many cases of inspection were to be noticed in which discolouration of the surface very slightly or not at all existed. The following description, which is a generalization deduced from a number of cases, most particularly applies to those instances in which the biliary secretion was deranged, and which constituted the most severe form of the disease.

External Aspect.—The yellowness of the surface was sometimes of a very deep tincture, and always became more intense after death; the face, neck, chest, and abdomen, were most highly coloured, and the conjunctivæ in the worst cases was of a saffron yellow. The penis, scrotum, pinna of the ear, and some of the flexures of the body, occasionally presented dark, purplish-brown, ecchymosed-looking patches. In certain instances where blisters had been applied, the vesicated part exhibited a deep mahogany colour, the circumscription of which was clear and well defined. The livid patches referred to seemed rather to be the result of capillary exudation than that of speedy decomposition, as the bodies did not appear to decompose earlier in this than in typhus fever. *Brain.*—The encephaloid mass did not, as a general rule, manifest any marked appearance beyond what is seen in the kinds of fever with which we are more familiar: this of course varied according to the degree of active cerebral affection during life; and in certain cases there were the obvious traces of acute disease. The dura mater was scarcely at any time affected. Often an unimportant quantity of serous effusion was discovered beneath the arachnoid, as well as the yellowish-grey pustular-looking depositions of lymph so commonly noticed under this membrane in cases of fever. Sometimes the sub-arachnoid fluid was of an opaque milky-looking character. The centrum ovale was not more than usually studded with bloody puncta. The serum found in the ventricular cavities of the organ varied from a couple of drachms to two or three ounces, was of a slight straw colour when abundantly present, and in some instances, on being analyzed, presented the crystals of urea. *Lungs.*—These organs were less frequently found diseased than in typhus, and such lesion as existed was mostly of a bronchial character, as evinced by an increase of secretion and a vascular condition of the lining of the tubes. With regard to the *heart*, no states meriting notice were apparent. The *pharynx* and *œsophagus* were generally natural, without any epithelial excoriation, as spoken of with regard to these organs in yellow fever. Where there had been grumous vomiting, these parts were more or less besmeared with the dark matters similar to those found in the stomach and duodenum. The lining membrane of the *stomach* at times showed ecchymosed-looking patches, varying from an inch or two inches in diameter to the half of its internal surface. Adherent to the rugæ might be seen a glistening gelatinous-like substance, and it appeared as partly consisting of exuded blood. Where these patches were present, the membrane by which they were covered more readily broke beneath the fingers than it did in other places; and the submucous tissue, when carefully examined, exhibited the coagulæ of extravasated blood. Ulceration was of very rare occurrence. The cavity of the organ sometimes contained a dark grumous matter, very similar to that ejected in black vomit of yellow fever.

These instances were, however, only in some cases noticed, and the dark bilious-looking fluid was much more frequently observed. The *duodenum* was often preternaturally vascular, but Brunner's glands very seldom ulcerated, and its contents were of a viscid bilious secretion, or matter similar to that to be seen in the stomach. With the exception of some degree of injection, the *jejunum* was unaltered. The *ilium* in many cases I carefully examined through the whole extent of its internal surface, and especially towards the cæcal extremity, and around the ileo-cæcal valve, where the glands are frequently found in an ulcerous state in ordinary typhus, but in scarcely any or no instances was ulceration there found in this fever. This morbid condition, so much spoken of by the French pathologists, and named by Bretonneau "dothinenterite," was not a lesion at all common in the fever of 1843-44. M. Louis regards a disorganization of Peyer's glands as constituting the true pathology of certain types of fever, a doctrine which has made some progress in France, but only by some authorities subscribed to here. Andral has shown that the ileum and cœcum are far more prone than the other bowels to be thus affected. Out of 92 cases given by Andral, the lower third of the ileum was ulcerated in 38 instances, and the cœcum in 15. Occasionally some degree of vascularity, it is most probable chiefly depending upon the irritative properties of the bile, was noticed. There might also at times be observed some dark, brownish-looking patches, closely resembling the discolouration spoken of with regard to the villi of the stomach, and the mucous membrane corresponding with these stains readily gave way beneath the fingers. The submucous cellular tissue there contained extravasated blood. Dr. Cormack, in his dissections, particularly noticed this fact. Examinations made on the bodies of patients who were in the hospitals at the time of the epidemic, and died of genuine typhus, very frequently showed ulceration of the lower bowels, and up to the time of the commencement of the epidemic (1842) the lesion in question was very much more frequently met with; but then the type of fever at that time prevalent was strictly typhoid, and consequently very different to the seven days' fever. What has been said with regard to the ileum may in a great measure be applied to the *cæcum*, as this organ presented no marked characters beyond what is related of the former. The *colon* was often injected, and sometimes presented the dark ecchymosed-looking patches above described. The solitary glands did not become disorganised. In no inspection which came under my own observation did the *rectum* manifest any very distinctive character, but Dr. Cormack, in two or three instances, discovered it intensely injected, with submucous extravasation of blood. From what has now been said relative to the digestive surface, in this form of fever, it is evident that there was a far less tendency to glandular ulceration than in typhus, which was the description of fever that had for many years previously prevailed in the large towns of Scotland, and even in protracted cases, where the patient had relapses, and thus some time subjected to the operation of disease, the lesion was scarcely at all observed. A general state of congestion, it is shewn, was the most marked appearance. From the accounts given by various authors respecting the yellow fever, it appears that in that disease intestinal ulceration is of unusual occurrence. No organ was perhaps so very generally affected as the *liver*, and even in those cases in which yellowness was not present, and where there was little room for supposing that disease there existed, inspection demonstrated preternatural congestion. The serous covering very seldom bore any traces of inflammatory action, whilst the parenchymatous structure was mostly in a turgid condition. On making a free section the larger vessels were engorged with dark blood, which would slowly ooze from the divided surfaces, and a deep-olive yellowish viscid secretion might also be seen in unusual abundance. The colour of the organ varied, sometimes being of a dark reddish brown or of a paler hue; the former, however, was the most frequent. The *gall-bladder*, in every inspection which came under my own notice, was preternaturally distended with a dark bile, although the cystic duct was always pervious, and the reports of others who had

witnessed autopsies bore testimony to the same. The bile in some cases was so much inspissated and very tenacious, that, by means of a dissecting knife, it could be raised in a ductile string to the height of three or four feet, or, if spread out, presented all the appearance of a coherent membranous substance. There were few inspections in which the *spleen* was found perfectly natural, it being well nigh always in a greater or less degree congested, and sometimes so much so as to be four or five times its normal size. The capsule did not become inflamed, but the parenchymatous part was often found in such a state of disease as to readily break beneath the fingers, whilst its consistency might sometimes be termed diffluent, and the semifluid bloody matter had a jam-like appearance. I did not see any autopsy in which the organ had gone into the suppurative state. One case which is now distinctly remembered, on making a section of the organ, the divided surfaces exhibited a number of yellowish white spots, varying from the size of a millet seed to that of a No. 4. shot. My friend Dr. Renaud, now of Manchester, kindly subjected some of those deposits to the field of the microscope, and discovered them to be composed of pus-gloubles. The organs which were next most frequently congested were the *kidneys*, and minute examination showed the Malpighian and portal plexuses to be engorged with blood, which, on a section being made, imparted a mottled appearance. As in all descriptions of fever, the *blood* underwent certain morbid changes, and it is fully evident that one, and perhaps the most important of such changes, was a diminution of fibrin; hence the tendency which there was to capillary exudation and petechial extravasation. On being drawn from the veins it was of a less formative consistence than natural, and Dr. Cormack says that the "crassamentum was a spongy mass, instead of a firm fibrinous clot." That author also says that the microscope revealed lesion, as evinced by the presence of pus-globules, and in addition that the globules were found serrated and notched. From inquiries made personally of Professor Allen Thompson, who instituted the researches, it appears that there must have been some misunderstanding on the part of Dr. Cormack, as the former did not corroborate the statement which is made by the latter in his work. Pus globules certainly did not exist in the blood. In order to be fully satisfied on this point, I procured the blood of a number of patients in different stages of the disease, which my friend and late teacher Dr. Hughes Bennett (whose histological acquirements, especially with regard to morbid anatomy, are well known to the profession), had the kindness to carefully examine, and this gentleman assured me that no pus-globules existed, nor yet the serrated and notched appearance as reported to have been observed by Professor Thompson. Dr. Bennett also informed me that, some time ago, being anxious to discover, if possible, in what the lesion of the blood in fever really consisted, he with great care examined the vital fluid in a hundred cases of typhus, in different durations of the disease and under various complications, but did not find any structural differences in the globules, and, indeed, arrived at no satisfactory conclusions. The *osseous* and *white textures* generally were, in marked cases, tinctured with a yellow tinge.

From what has now been said relative to this particular part of the inquiry, it will be seen that the liver, spleen, and kidneys, were the organs in which lesion was most frequently detected, such consisting of a highly congested state, which could not fail to exert the most deleterious influence on the functions of the latter and the former, and thus from an impairment of the actions of these organs certain morbid processes were sure to be instituted in the system, calculated to be attended with serious results. In the form of fever usually termed continued, common to these islands, as also other parts of Europe, the researches of modern pathologists have demonstrably proved that the lesions most frequently discoverable are, serous effusion into the cavities and beneath the membranes of the brain, with great vascularity; an injected condition with morbid secretion in the bronchial tubes, ulceration in the digestive surface, especially in the glands proper to the mucous membrane, &c. These discoveries were chiefly made by the physicians of Dublin, Edinburgh,

London, and Paris, and have up to this time been considered as correct conclusions. If, however, we are to account the fever at present under description as strictly belonging to the continued class, of which there is no doubt, it is evident that the morbid anatomy has presented unusual characteristics, as organs in the autopsies of that distemper were as the rule affected, which in typhus were far less frequently diseased. It is true that embarrassment of function, and change in the structure of the brain, was sometimes noticed, as observed by Dr. Alison, yet there were often good reasons for believing that the head symptoms, and the changes which took place in the encephalon, in some of the worst cases, were frequently referrible to a perversion of the secretional functions of the liver and kidneys, most especially of the latter, as it has been endeavoured to shew that certain cases presented all the symptoms of being affected with a narcotic poison, thus rendering the head complication of a secondary rather than a primary nature.

4thly. *The Sequelæ.*—Sequels of fever of the continued form are not frequent occurrences, and, when observed, are seldom in persons of hitherto robust health and unbroken constitution. Individuals in advanced life—those who have previously had visceral disease, and thus a proneness left in certain organs to the re-establishment of morbid action, or where the vital powers have long laboured under some powerfully depressing agent—are circumstances chiefly giving rise to post-febril affections. In those instances of fever in which, during their course, there has been an inflammatory complication of some organ, such structural changes may have taken place, so that its functions cannot be regained simultaneously with the cessation of the idiopathic fever, and thus, from such impairment of its action, certain anormal conditions be instituted in the system so as to constitute disease. This particularly applies to the hepatic and renal viscera. The circulatory function being so affected, as it is, in fever, most especially in the intermittent type, congestions in the parenchymatous viscera are very liable to occur; hence the spleen in that form frequently becomes considerably enlarged; and, as previously insisted, the distemper in question presenting some characteristics of the intermittent nature, it might have been supposed, as was the case, that this organ would often be increased in size. The congestion of the spleen, however, has previously been adverted to, and considered as a complication, although it not unusually continued in an enlarged state long after the febrile phenomena had subsided, and thus, perhaps, might not improperly have been mentioned here. Such sequels as were most frequently noticed are briefly described below; yet, notwithstanding, a few isolated cases of post-febrile affections, to which no allusion is made, sometimes occurred; but, as these seemed rather dependent upon previous conditions or adventitious circumstances, than on the distemper, they have been silently passed over.

The first sequela now to be spoken of is one that very commonly succeeded, and was of the most unusual character, viz. a peculiar form of *ophthalmitis*, which often became manifest long after the patient had been dismissed the hospital. At the first these cases were regarded as mere accidental occurrences, not being attributed, as subsequent experience shewed to be the fact, to any causes originating in the disease under which they had recently laboured. None of the usual forms of fever of this country possess such a tendency to produce the affection in question as the seven days' fever; and, with one exception, I am unaware of any epidemic recorded where the same has been observed as a sequel. It is true that the ordinary typhus will sometimes be succeeded by some visceral disorder, but such instances are generally referrible to some pre-existent state, and are mere occasional occurrences. The epidemic referred to in which the same was noticed, was the Dublin fever of 1826; and Dr. Jacob, of that city, published an account of a post-febrile ophthalmitis which had been undoubtedly of a very similar description to that now related. All the textures of the eye seemed subject to become diseased; the conjunctiva and sclerotic would be intensely injected, whilst ulceration of the cornea, discolouration of the iris, contraction of the pupil, dimness of the capsule of the crystalline lens, &c., shewed that no particular part of the organ was the special

seat of disease. The premonitory symptoms were most generally a state of amaurosis, which preceded the manifest appearances for the space of some days. In Glasgow, Paisley, Dundee, Aberdeen, &c., the same affection was observed. Dr. Douglas Maclagan, at one of the meetings of the Royal Medical Society, said that a few days previously he had been at the Glasgow Eye Infirmary, and that in less an hour twelve or fifteen patients presented themselves with this disease at that institution! From what was seen of the disease by myself in the Edinburgh hospitals, no particular age seemed to confer an immunity, and the time which intervened between the fever and this sequel varied from a couple of weeks to three months; but the most frequent time was five or six weeks. When they presented themselves at the hospital, the conjunctiva was mostly a good deal injected, and the patient complained often of acute circum-orbital pain. The best account given of this sequela is by the eminent oculist, Dr. Mackenzie, of Glasgow, and published in this journal, Nov. 24th, 1843. In the article referred to, the following facts are given relative to thirty-six cases which came under the author's notice. Twenty-seven were females, and nine males. In eighteen cases the right eye was only affected; in ten the left only; and in eight both eyes together or consecutively. The following were the ages of the patients: viz. below ten, 2; from ten to twenty, 17; from twenty to thirty, 9; from thirty to forty, 2; from forty to fifty, 3; and from fifty to sixty, 3. Mr. Wallace, who wrote on the affection in question, as noticed in the Dublin fever, and quoted by Dr. Mackenzie, says, that, out of forty cases, only four had the disease in the left eye, and only two in both—facts which in a great measure coincide with what has been delivered by the last author. Dr. Mackenzie thinks that the arteria centralis retinæ and vasa longa first became affected, and that the irritation extended to the ciliaries, &c. It is also stated in the paper now quoted from that the disease bore a very close resemblance to the ordinary catarrho-rheumatic ophthalmitis, as well as there being a likeness to syphilitic ophthalmia. Dr. Mackenzie gave it the name of *ophthalmitis post-febrilis*.

The following is an example:—

Case XII.—*Peculiar form of ophthalmitis coming on during convalescence.*

Sarah Ewart, æt. 20; married; a dressmaker; complexion dark; volume of flesh good. Admitted Dec. 11, 1843. States, about two months ago was admitted into the hospital with epidemic fever, which she had in the ordinary form. Did not relapse, and was dismissed at the end of five weeks (Nov. 23rd). Two days after having left the institution, felt the powers of vision of left eye somewhat impaired. On the 28th experienced some pain, and this increased, accompanied with redness and lacrymation, until the day of her re-admission.

To-day (11th) complains of severe sense of pain in left eye, which upon examination shews the conjunctiva to be much inflamed and injected. Has some cough, which she has had for many years; sleeps well; appetite good; skin cool; bowels open; tongue clean; pulse 84. Complains of no other pain.—Temp. Sinistro. app. Hirudines xii. Foveat. ocul. c. Decoct. Papav. somnif; Habeat h. s. bolum eum Pulv. Jalap. Co.

Dec. 12th.—Leeches bled well; bowels opened by bolus three times; little change in the appearance of the eye; perspired a good deal last night; pulse natural.—℞ Zinci. Sulph. gr. xii.; T. Opii, ℥ss.; Aquæ, ℥viij. solve sit collyrium sæpe utend.; ℞ Sulph. Magnes. ℥ij.; Pulv. Ant. Tart. gr. ij.; Aquæ Fort. lb. ij. Sit. Mist. cap. ℥ij. statim et rep. om. secund. horâ donec alvus soluta fuerit.

13th.—Some improvement in the eye this morning; pulse soft, of moderate size and frequency; bowels freely opened without producing any nausea.—Temp. Sinist. Cucurbit. Cruent. et detrar sanguin. ad ℥vi.; app. Sol. Cathart. Cont.

Dec. 14th.—Cupped to ℥vj. with considerable relief to the eye, which is less inflamed; iris possesses perfect power of contraction and relaxation, and does not appear the least affected; pulse natural: had three or four stools; H. Som. sum Bolum c. Calomelanos gr. x. et Pulv. Opii gr. iss.

Dec. 15th.—Eye much the same to-day. Temp. Sinistro emp. Lyttæ Appl.

16th.—Blister has risen; eye much

less inflamed. Infra oeul. hirudines xii. applieentur. ℞. Calomelanos gr. xii. Pulv. Opii gr. iij., Cons. Ros. q. s.; divide in pilulas vj. Cap. i. q. q. q. horâ.

20th.—Gums slightly affeeted; blister discharges; eye appears much better; pain gone; Pil. Calomel ter quotidie tantum eontr.

22d.—Gums still slightly affeeted; inflammation of eye subsides; no pain; bowels open; pulse regular; Pil. cont. bis die tantum.

24th.—Continues to improve.

26th.—Inflammation of eye nearly gone; no pain; bowels open; tongue and pulse natural.

28th.—Improves.

29th.—Dismissed eured.

Remarks.—In the above ease, as in the majority of instanees, the amaurosis preceded other morbid conditions; the redness and laerymation, however, soon succeeded, developing active inflammation, while the severe pain complained of on the 11th inst. was, it is highly probable, solely attributable to the general congestion of the organ, producing pressure upon the sensific nerves, and not to mere neuralgia, because this pain was not urgent until the conjunetiva and sclerotiea were injected, and as soon as the vascularity was diminished the pain also subsided; this is mentioned, because in some affeetions of the eye eonsiderable pain may be experienced without any trace of positive inflammation. The iris maintained its natural state, yet, aeeording to the surgeons of the Edinburgh Eye Infirmary, who, of course, saw much more of the disease than was to be witnessed in the hospitals, the iris was very generally affected. The treatment observed in this case was of the antiphlogistic order; Dr. Mackenzie placed much relianee upon depletion and mereurials, and where the pupil beeame implieated he uniformly applied belladonna: that surgeon also, with mueh benefit, gave quinine, which Mr. Wallaee conceived, during the Dublin epidemic, to possess a speeific influence on the disease: this however is very doubtful.

Glandular affection.—The parotid glands, more than any other, during convaleseenee beeome diseased; in some few instanees, however, the submaxillary and inguinals were enlarged. Persons of a strumous habit, with whom glandular enlargements are most common, are usually the individuals attacked with this sequel; generally speaking, this sequel was not of frequent occurrenee.

Case XIII.—*Affection of the parotid glands.*

William Melrose, æt. 55, admitted Dec. 5th, 1843, was seized with rigors previous to admission, and had taken aperient medicine; on admission complains of head ache, some abdominal tenderness, and severe arthritic pains. Skin hot and dry; pulse 100; much thirst; anorexia; tonge dry, and eovered with a witish yellow fur; some degree of tendeney to yellowness; is restless, and eannot sleep; urine copious; bowels open; Habeat. H. Somn. Calomel. gr. v., Pulv. Doveri gr. x.

6th.—Feels better; passed a good night; bowels confined; slight yellowness yet continues; statim sumat. bol. c. Pulv. Jalap. Co. ʒi.

7th.—Is more feverish; urine scanty; intellectual faculties somewhat impaired; no pain in abdomen, nor over region of liver; skin hot and dry; ℞. Sp. Æth. Nit. ʒss., Potasse Nit. ʒi., Liq. Amm. Acet. ʒiss., Aquæ, ʒvi., Sit. Mist. cap. ʒi. 4tis. q. q. horâ.

8th.—Symptoms very slightly relieved; urine passed eopiously. Medieamenta cont.

11th.—Feels better to-day; less yellowness of surfaee; bowels open; urine passed freely; skin eool; pulse natural; appetite returning. Continued to improve under a moderate allowance of stimulants up to

20th.—Complains of slight shivering; tongue coated; skin hot; some degree of tenderness and swelling of the right parotid gland, aeeompanied with some difficulty in protruding the tongue. Cataplasma parti aff. appd. Habeat bolum. c. Calomel. gr. iv., Pulv. Jalap Co. ʒss. Stimulant omittantur.

21st.—Swelling increased in parotid gland, aeeompanied with greater tenderness—otherwise the same.

22nd.—Swelling of parotid more prominent, and submaxillary gland is also affeeted; pain over these parts increased since yesterday; slight eough; tongue still protruded with diffieulty; pulse rather weak. Cataplasma Cont.

23d.—Mueh the same; no appear-

ance of amendment; swelling considerable.

24th.—Pain and swelling of right side of neck and face advancing, coupled with hardness over the laryngeal cartilage, and some tendency for the same morbid condition to be extended to the left side and left parotid gland. — Cataplas. amp. inter aures imponatur. Statim sumat Pulv. Jalap. Co. 3j. Cough much the same; pulse not weaker: and except from pain caused by mechanical pressure over air-passages, states himself easier.

25th, *mane.*—The swelling is generally greater, accompanied with increased difficulty in the performance of respiratory motion. Slight fluctuation over right parotid gland, in which direction a puncture is made, and from which 3ij. of matter are evacuated of a thick ropy consistence. Complains of cough being more troublesome; countenance somewhat sunk, and expressive of anxiety and uneasiness.

8 o'clock, P.M.—Breathing becoming rapidly worse; intellectual powers perfect; has difficulty in speaking; complains of pain in the chest. These symptoms continued to increase in intensity, and at 10 o'clock, P.M. he gradually sunk.

Sectio cadaveris, 36 hours after death.

Head.—Brain healthy, as also its membranous coverings.

Chest.—Lungs have considerable old pleuritic adhesions; at the apex of the left lobe is a cicatrix communicating with a degenerated tubercular cavity, which is filled with a calcareous deposit. Base of right lung indurated, and passing into the state of grey hepatization. On pressure a frothy muco-purulent matter is exuded: this applies — but less generally — to left lung.

Heart.—Healthy.

Abdomen.—Viscera healthy.

Neck.—The whole of the right parotid gland is softened, and in some places presents cavities filled with pus, but these do not communicate with each other. Some degeneration has commenced in the concatenate glands, all of which are softened. Left parotid is passing into the same condition, but in a less degree of advancement. Thyroid gland healthy.

CASE XIV.—*Affection of the parotid gland.*

Mary Ogalvie, æt. 17, admitted Nov. 8th, 1843. Complexion light, and of phlegmatic temperament.

Had the epidemic in its ordinary form, and her case might be considered as one of a very mild description. Relapsed on the 14th day after the crisis. Two days after relapse experienced some pain over the right side of the neck, where, upon examination, slight swelling was perceived, the parotid gland appearing a good deal enlarged. Two days subsequent to this, three or four incisions were made after the previous application of fomentations and poultices. Warm applications were again applied with a repetition of the incisions in the course of two days more. Antimonials and purgatives were given at the same time. The sub-maxillary gland also became affected, and a similar course of treatment pursued, and under which a speedy recovery was the result.

REMARKS. — In the first of these examples it is seen that the inflammation of the parotid was of a very persistent character, and the measures adopted exerted but little if any influence on the progress of the disease. The mechanical obstruction produced in the air-passages added much to the general disturbance, and tended to usher in the fatal result: besides, there are good reasons for believing that the recurrent laryngeals might be so much subjected to pressure as to impair their functions, and thus the action of the larynx be seriously affected. The inspection of the body did not present such morbid appearances as to satisfactorily account for death, none of the vital organs evincing particular structural changes, with the exception of the lungs, and thus the disease was chiefly confined to one lung, and this was far less than what we generally observe in those instances of pneumonia which proceed to a fatal termination. Upon the whole, perhaps, the most correct conclusion would be, that the general prostration incident upon the febrile course, in conjunction with the additional disturbance induced in the air-passages, was the true cause of death. Respecting the girl Ogalvie, it may be remarked that the free inci-

sions which were made in the gland were followed with the best results, and from that operation the turgescence and other inflammatory symptoms quickly subsided.

Sloughing.—In such fevers as assume the adynamic type, where the vital powers are much prostrated, and there has been a long and tedious course of disease,—where the voluntary muscular system is much deteriorated, and the patient long continues in one position,—destruction of the integuments and often of the deeper tissues is not uncommonly witnessed. Again, in those forms of fever in which the disease quickly passes through its stages, and thus the prominent parts not being affected by pressure, sloughing is an uncommon result; and thus it was in the seven days' fever that this sequel was of far less occurrence than in typhus. In yellow fever bed-sores are said to be very uncommon.

Case XV.—*Sloughing of integuments.*

Jean Morrison, æt. 31; a servant: admitted Oct. 9th, 1843.

Her attack was ushered in by the ordinary mode of accession, nor did any unusual symptom present itself until the

12th.—This morning there is slight yellowness of the conjunctiva, and a tawny tinging over the surface generally, especially on the chest and superior extremities.—Habeat Ol. Ricini, ℥ss. statim.

13th. — Yellowness more distinct; urine scanty, and high coloured; fæces dark and bilious looking; tongue covered with a whitish yellow coat. Slumbers a good deal to-day, but slept little during night. Some pain on pressure over right hypochondrium, extending to epigastrium: pulse 108, small, and rather compressible.—Sinapismus epigastrio applicand. Emp. Lyttæ vertici imponatur. Habeat bolum c. Calomelanos, gr. iv. et Pulv. Jalap, ʒj; Vin. Rub. ʒvj; Sp. Communis, ʒiv.

14th. — Feels easier this morning; bowels opened by powder; stools bilious; skin not quite so yellow; less pain in epigastrium; looks more lively; tongue cleaner and moist; pulse 100, of better strength.—Vin. et Spiritus cont.

15th.—Continues better; slept well last night; bowels open; tongue moist; pulse more natural, and of better strength.—Wine and spirits to be continued.

16th.—Continues to improve. Complains of some tenderness in lower part of back, where, upon examination, a slight circumscribed blush exists over the integuments covering the sacrum.—Ordered to lie upon the side.

17th.—Feels better of herself, but the back is reported to be exceedingly sore.—Cataplasma part aff. app.

18th. — Yellowness nearly gone; tongue cleaner; bowels open; pulse more natural.—Wine and spirits to be omitted.

20th.—Complains of nothing except the sore on the back. On examination, the skin looks much affected, and ready to peel off.—Cataplasma cont.

22d. — The sore on the back discharges some exudating matter; the skin is broken, dividing at the line of demarcation. — Poultices to be continued. Lotio Plumbi lbij. sæpe utenda.

25th.—The slough on the back seems almost ready to come away, and the matter continues to be discharged.—Cataplasma cont.

28th. — On examining the back a deep concave sore is seen, of about three inches in length and two in breadth, which secretes a large quantity of purulent matter, the slough having come away. In other respects the patient continues to improve.—Ordered steak diet, with a pint of porter daily. Wine to be discontinued.

The case from this time continued to improve.

Remarks.—The short space of time that this woman was confined to bed previous to the skin becoming inflamed, seems a brief period to cause the affection at issue. I well remember, however, that she was more than usually prostrated, and laid continually on her back in a very helpless state, and was a stout person, of a pale and relaxed appearance. A generous diet, together with the ordinary means of application, and preserving the parts from pressure, produced a gradual though slow cure.

Boils. — These morbid conditions were, according to my own experience, of rare occurrence, and when they did take place were in instances of the yellow complication. A vitiated state of the fluids appeared to constitute the main cause of this sequela. On

reference to Case No. X., it will be seen that the patient had several large bullæ, which are there described.

Ulcerative sores.—Sometimes during convalescence the physician's attention was directed to ulcerated sores on the inferior extremities, which for the main part occurred in the aged and infirm, and especially in such persons as had previously had ulcerated legs. In some few cases an ulcerative sore was observed of unusual appearance. The spot at first presented a livid hue, or was an hæmorrhagic-looking patch, and clearly circumscribed. The superjacent cuticle became tense and shining, and at the expiration of three or four days it gave way, when dark coagula were exhibited, and a thin sero-purulent matter began to exude. The few cases of this description were uniformly observed on the inferior extremities, and varied from the size of a sixpence to that of a shilling-piece. Tonics, an improved diet, together with emollient dressings, soon promoted a cure.

Œdematous swelling of the legs.—All diseases which produce a general declension in the vital powers tend more or less to the production of venous congestions; and this particularly applies to fevers, during the course of which debility forms a prominent feature, and thus the circulatory function often becomes so much impaired as to affect that nice equilibrium which there is in the distribution of the vital fluid during positive health: hence those congestive states which are generally noticed wherever there is considerable corporeal weakness. The greater the distance from the centre of circulation, the more tardy and irregular becomes the blood in its course; and thus it is that the inferior extremities from this cause, as well as that which is superadded by the physical influence of retropulsion, which has to be overcome by the transmission of fluids in a direction contrary to the laws of gravitation, are rendered œdematous. The extreme vessels then become preternaturally distended, their contractile power diminished, and a tonic fulness is the result, which is followed by an exudation of the aqueous part of the blood into the surrounding cellular tissue. From this, then, it is evident that the greater the debility the more will this morbid process be liable to occur, and thus in those fevers which are of a typhoid character the sequel in question is far more common. In the convalescents from typhus, swelled legs were more frequent than in the seven days' fever, and in the latter those individuals who had previously had a bad and insufficient diet were most usually thus affected. A liberal allowance of food, the moderate use of stimulants, together with friction, bandages, &c. were the best means of remedy.

5thly, The treatment.—Numerous as have been the doctrines from time to time advanced relative to the true nature of febrile diseases, such have scarcely been more various and opposite than the modes of treatment recommended. According to the particular pathological theories entertained are in some degree determined the kind of remedial agents to be employed, and thus it is that philosophical inquirers who have differed in their opinions respecting the ultimate nature of the disease, have been led to the adoption of curative measures which in their nature and action are highly opposed; and hence have been espoused two principal modes of cure, which, though modified according to the suitableness of existent circumstances, are the cardinal means whereby the affection is treated, viz. the depletive and stimulative methods. It is the want of decisive proof, and the need of demonstrative facts, which prevent the establishment of an unequivocal line of practice; and so long as the ambiguity that obscures the radical pathology exists, will there be the propounders of novel notions, and fresh examples of practice occasionally entertained in the ratio medendi. One physician will affirm that the prostration is wholly dependent upon local congestion, and consequently impairment of the function of some organ or organs—especially those termed vital, and hence has recourse to the lancet. Dr. Armstrong in the early part of his life was an urgent supporter of this theory, and his boldness in the vindication of it won for its zealous advocate the highest professional renown; but time, however, frequently the gradual but true exposer of human fallacies, dispelled the illusion, and at the latter end of his practice he became as imbecile in his treatment of fever, as he had before been daring and energetic. Another will say that the prostration is produced by some occult impression made upon the nervous system—that the loss of equilibrium in the circulation is owing to the impairment of nervous power, and that unless nature be assisted in her conflict with the morbid agent, there would be a danger of her failing in the strife—therefore wine is liberally prescribed; a third, whose numerical recoveries are perhaps well nigh as great, pursues a middle course, or it may be observes a plan which from its simplicity and apparent inefficacy seems quite incapable of making any decided influence upon the progress of the malady. These statements, although they appear to reflect discredit upon the art, and shew our notions respecting the real nature of the affection not to be precise and conclusive, are nevertheless true, as must be conceded by all those whose opportunities in the treatment of fever, and acquaintance with its literature, have been sufficient to enable them to judge. It must be remembered, however, that all writers of eminence are liable to cling to entertained hypotheses, and are seldom altogether unbiassed in their statements, so that some slight deductions should be made for partiality and preconceived opinion, and it may fairly be concluded that a rational treatment of fever, when founded upon the true principles of science and extensive experience, can do much in conducting the malady to a successful termination. To pertinaciously adhere to any particular form, is false reasoning, nor in any wise based upon philosophical inference, because it often becomes absolutely necessary to modify our measures according to exceptional circumstances and unforeseen exigencies. Mere practical men and symptomatic treaters err by not anticipating the changes in the train of events which we know from previous observation are liable to follow, whilst the unpractised theorist is too often disappointed by his hypothetical notions being refuted by demonstrative facts. If these days of fashion and fancy in the cure of diseases have given to the world systems, which, arguing from all hitherto formed ideas and experience, appear but incongruous vagaries, their very refutation, and the discussion to which they have immediately and indirectly given rise, have certainly had the happy effect of incontrovertibly proving that we have

with too much prejudice been wedded to long-received notions—notions which are sweepingly embraced, not from conviction of their truth, so much as from the warrant of precedence and the recommendation of ancient usage: such have also exemplified, that too implicit a reliance has in recent times been placed upon the virtues of medicines alone, and not sufficient importance ascribed to regimenal rules—that active interference is not only often of no avail, but positively injurious—that the power of hope and confidence are not a little beneficial—and that the unaided efforts of nature can of themselves frequently work out their salutary operations. In so far, then, the innovations which an age avaricious of novelty has admitted, have been of some service in bidding us to impartially enquire; and thus it may be, that the promulgation of error may have with its leven elicited some issues of truth. Whatever may by the physician be deemed the most approved general principle of practice, every case, from the idiosyncrasies of the patient, the kind of complication and its degree of intensity, the previous state of health and habits of the individual, the external influences to which he is exposed, together with other considerations, must indicate certain other modifications in the remedies administered, whilst that nice discrimination in the detection of local affections when in their incipient state is of essential importance. When inflammatory complications arise they must of course be treated upon those general and acknowledged principles pursued in phlegmasial diseases, but always at the least possible expenditure of vital power; for it must ever be borne in mind that the system has to contend with a primary depressing influence arising from the noxious agent which it has contracted, since the abstraction of blood should never be carried beyond what is absolutely requisite, and such remedies as are likely to supply the place of bloodletting should sedulously be employed. On the continent, and especially in Italy, the emetic tartar has with this view been much extolled. During the stage of high vascular excitement there can be no doubt of its often being highly serviceable, yet in my own humble opinion there are certain disadvantages connected with this drug which forbid its very general exhibition: as in the very young; in those far advanced in life; where the type of the fever inclines to the adynamic form; where the vascular excitement is not very marked, &c., and also on account of its proneness to excite irritation in the digestive mucous surface, and thus laying the foundation of ulcerative lesion, a condition so frequently present in typhus. In many instances, however, this remedy along with others may avert the necessity for active depletion. It has before been stated that two epidemics are never observed exactly alike, and it may also be added that visitations occurring even but a very short time of each other may be of very dissimilar types, or even in the same locality simultaneously exist which are manifestly different in their nature, as exemplified in the fact of the seven days' fever and the ordinary typhus, being present in various parts of Scotland at one period. Hence, there being such differences in the nature of febrile attacks, it is conclusive that the treatment found highly serviceable in one form might in another be far less successful, and thus it becomes manifestly important to carefully study the particular characteristics of the disease, ascertaining by cautious measures what remedies are effective or hurtful. Sydenham and the older authors were fully impressed with this truth, and paid the greatest attention to what they termed the *juvantia* and *lædentia*. There is no dispute that the fevers common to the British Islands have during the last thirty years become altered in their type,—that is, they are now of a less sthenic and more of the asthenic nature,—consequently demanding a line of treatment inclining more to the stimulative than the depletive order. Perhaps this change is more obvious in urban communities than in the rural districts, owing to the more numerous debilitating causes in the former than in the latter, which of course would generate, in the class of individuals amongst which the fever spread, a proclivity to the adynamic character. It is always expedient to narrowly watch the progress of the disease, guarding against unlooked-for symptoms, and rendering assistance to the efforts of nature when she seems unequal to the task, when we become decided in what such efforts consist, for when once the disease has fairly

commenced we cannot hope to cure, although we may guide it.* The Cullenian aphorism to obviate the tendency to death† is an axiom ever to be remembered, and all our views have reference to that great truth which science and right reasoning have established: so that, in the language of Tacitus, it might be said

"Ad utilitatem vitæ omnia concilia nostra dirigenda sunt."

The patients on admission, if not too far advanced in the disease, or when there were positive contra-indications, were ordered a warm bath, which had the two-fold advantage of tending to restore the cutaneous circulation and rendering the patient clean and comfortable; nor was the latter of slight importance, seeing that a great majority of the patients were from the most squallid and filthy parts of the city, with whom personal cleanliness was very imperfectly observed.

a. Bloodletting.—It is evident from the ancient writers, that the abstraction of blood in febrile diseases has been practised from the remotest antiquity, and on the revival of letters this remedy was employed according to the views of the ancients, to whose opinions the physicians of the middle ages looked with implicit belief, and regarded with reverential respect. The older authors considered bloodletting of utility in subduing the tumultuous action of the circulation, and thus arresting an undue determination to the vital organs. The philosophic minds of Sydenham, Hoffman, and Boerhaave, shewed that the timidity of their predecessors, who were less bold in their practice, was unfounded, and advocated a more extensive use of the lancet. The Cullenians, basing their practice upon a theory different to that of Sydenham and his disciples, did not carry out blood-letting in the same heroic manner, but used it more in the spirit of the Ovidian maxim, "in medio tutissimus ibis"; they bled, but with greater caution, and the notions of Gillkrest since his time have had an influence in modifying the practice; he stoutly insisted upon the mischief which might be done by injudiciously abstracting blood in fever, and strongly impressed the consideration of debility and putridity. Huxham and Pringle also advocated the same, and the opinion of a peculiar debility, which was long after entertained, undoubtedly imbued the mind of Cullen with that doctrine which has ever since exerted no slight influence on the treatment of this affection. From the time of that great systematic writer, amongst the warmest advocates of blood-letting have been Armstrong, Clutterbuck, and Welsh. That its proper employment in particular types and under certain circumstances is of inestimable benefit none can dispute, and that its indiscriminate use has produced more disastrous results than any other remedy in fever, must at once be acknowledged. It sometimes happens that the physician meets with cases beset with perplexing difficulties, and where the most deliberate and nicest judgment are demanded—when excitement is passing on into debility, when determinations of blood in the vital organs are producing additional prostration, in advanced age, in the very young,—where there has been other disease, the previous habits of intemperance, &c.: it is in such instances where correct reasoning is of paramount importance, and where precipitancy of action and imprudent boldness are as liable to lead into error as to conduct to success. To moderate excessive vascular action is undoubtedly correct; it often happens, however, that this stage has passed its acme before the physician is called in, and sometimes the excitement of the circulation is never very marked. During the state of high vascular action, we may bleed to a far greater extent than before or after such state, periods when it would be attended with less benefit if not with positive harm. When the action of the heart is quick and forcible, the skin hot, eyes suffused, breathing full and deep, excretions suppressed and animal functions uninterrupted, we may with advantage bleed, for it is in this stage blood by being sent to the visceral organs, founds the commencement of positive lesion; hence the best time for abstracting blood is at an earlier part of the disease, as the prevention of complication is more under our power than its cure. The want of a proper consideration of this fact has led to the grossest errors, and those who bleed at all times during the fever are ever unsuccessful in their practice. If good be done by means of

* Pitcairn.
† Cullen's First Lines, vol. i.

the lancet, one or two bleedings will generally suffice. Hildebrand recommends moderate venesections and repeated; but at the outset of the affection, when the pulse is full and strong, it is decidedly better to make an impression upon the heart's action, and subsequently use the other auxiliaries in subduing the pulse. When the epidemic is particularly prone to give rise to inflammatory complications, general depletions can be employed more energetically, and it has been from the success which has followed free bloodlettings in the sthenic type that physicians have been led to overrate the efficacy of the measure: here, as insisted, it is always desirable to pay much attention to the nature of the prevailing distemper. Large bloodlettings have by some been recommended solely with the view to abruptly check the fever in its course, before the reaction has fully and fairly become developed. This cutting short of the disease is very questionable*; we are aware, however, that by making a powerful effect upon the pulse a copious perspiration will sometimes succeed, the bowels and kidneys be acted upon, and thus after such excretions have become excessive, the patient will sometimes at once be restored to health,—as if nature had become relieved, and the noxious agent expelled or rendered inert by such increase of excretional action. Speaking from personal experience I have great reason to believe that such does occasionally occur. When physicians' resident assistant in the Edinburgh hospitals, it is my firm conviction that once, if not twice, the fever was averted in my own person by the induction of a very powerful diaphoresis before the reactive stage commenced, and as soon as the initiatory symptoms of chilliness and languor were experienced. Such instances were very rare, and I do not remember any case, where spontaneous reaction had taken place, of the disease being arrested in its course. This tumult of the circulation appears to multiply and develope the noxious agent in the blood, and to convey it with greater force and frequency through every tissue of the body. The effect which the abstraction of blood has in fever is sometimes marked, and continues (especially when the secretions are increased), but, on the other hand, it is often of brief duration, and when a large bleeding has been employed it is no uncommon thing for the heart's action to re-assume its former power and quickness in a short time,—a fact not uncommonly witnessed in the seven days' fever; if, on the contrary, a high and bounding pulse has been subdued, and does not regain its wonted height, we may conclude that the treatment was indicated, and especially when from being quick, sharp, and strong, it becomes softer, slower, and fuller; with such a change as this the skin will be more moist, the tongue less dry, nor the thirst so urgent. It has already been stated that the pulse in the seven days' fever would assume a degree of frequency so high, without there being any apprehensions of danger, which rendered this one of the many distinguishing peculiarities of the distemper, nor was blood-letting in any particular manner employed on account of such excessive vascular action; experience in the disease proving that this unwonted impetuosity in the circulation did not, as might have been anticipated, commensurately give rise to organic lesion,—another fact impressing us with the desirableness of studying the particular type; and not only should attention be paid to the nature of the fever, it is repeated, but also the individuals under our care. The lower orders of the inhabitants of large cities are far more liable than the inhabitants of the rural districts to present the adynamic form—and hence the treatment varies. In the Edinburgh hospitals, as may be seen from the tables which have been given, a great majority of the patients were from the wynds, closes, and pent-up streets in the Old Town and Leith; the emaciated and pale-faced denizens inhabiting which places are of too squalid and over attenuated frames to indicate energetic depletive measures. When the fever is of the inflammatory kind, even such individuals will bear more abstraction of blood than might be supposed. Country patients, from living in a purer air, being better fed, less given to intemperance, and other excesses, their more plethoric and fibrous habits, better constitutions, &c. are far more eligible for blood-letting; a truth generally

* Copland expresses the same opinion.

acknowledged, and which my own opportunities of observation have supplied abundant proofs. The most important questions respecting blood-letting in this disease are manifestly these :—viz. does the debility, so distinguishing a feature in fever, proceed primarily from excess of action in the circulating system, and such excess of action give rise to congestion and inflammation in certain of the vital organs, and thus affect the organic nervous influence proper to such organs; or, is it dependent upon some remoter and more occult effect produced in the solids, from a preceding depressive influence exerted on the nervous system? would lessening the current of the circulation always tend to avert the evils of local determinations? how long may recourse to the lancet be had after the vascular excitement has reached its maximum? and what are the decisive symptoms and conditions which lead us to rely upon other expedients, and constitute the preludes to more manifest indications of graver changes? These points are not satisfactorily established. If the proneness to local engorgement were solely owing to excited vascular action, the abstraction of blood ought then to be marked by more of that certainty and success which follows its employment in the phlegmasiæ. It seems pretty evident that, although an overloaded state of the visceral organs must necessarily contribute very materially to the general debility, yet another and primary cause is that of a morbid impression being made upon the brain, spinal marrow, and organic nerves,—a doctrine which, in our practice, should never be overlooked. It must hence appear undeniable that much caution should ever be given to the employment of this remedy in fever, more especially when had recourse to at an advanced stage of the disease, for if improperly and adventurously used, the most serious results may accrue, whilst, on the other hand, a remedy so potent and often efficacious where it is indicated should be ever employed, so that it might be said in the words of Lucretius,—

Judicio perpende, et si tibi vera videtur
Dede manus; aut si falsa est accingere contra.

The abstraction of blood in the seven days' fever, though sometimes had recourse to, was not attended by those decided advantages which appear to have been the case in the epidemic of 1817-20. It is true that the intense headache which there was would be relieved by a full depletion, but this alleviation would be only for a brief period; the pulse again rising, and the uneasiness and pain complained of becoming as great as ever. The copious diaphoresis which invariably determined the critical period lowered the pulse as effectually as blood-letting, and such reduction was permanent, nor were there those apprehensions of visceral lesions, accompanying a high pulse in other forms of fever, which usually warrant the aid of the lancet. In certain cases of the young and plethoric with strong fibre and unbroken constitution,—when the pulse was full, forcible, and quick—in fine, where there seemed present a train of indications demanding abstraction, venesection did not produce those benefits which might have been anticipated; where, however, there was acute complication, its use was unequivocal and decided. On reference to the statistics, it will be seen that, in Table No. V., out of 80 cases, 7, or 1 in 11·42, were bled from the arm; in Table No. VI., general blood-letting was adopted in 19 out of 450 cases, being 1 in 23·7; in Table No. VII., out of 40, 5, or 1 in 8; and in Table No. VIII., out of other 80 cases, only 4, or 1 in 20, were bled. Thus, out of an aggregate of 650 patients, in only 35 was general blood-letting employed, being but 1 in 18·56 of the whole number,—a fact proving that the type of the distemper was not inflammatory. Comparing these with the statements of Dr. Welsh, the difference will at once be apparent. That author details particulars respecting 16 patients whom he treated most heroically, the average amount of blood taken from each of these being 85·4 oz. and the average number of leeches applied was 15, and one man was bled from the arm seven times. Out of fifty other cases, thirty-four were bled from one to four or five times, and the quantities taken at each operation varied from ten to thirty ounces. These particulars are cited to show the great dissimilarity in the treatment, and of course in the nature of the two epidemics, corroborating what has been

said on this point. Dr. Welsh, like all other men who espouse a particular theory, carries his doctrine to an extreme, by so urgently recommending the abstraction of blood in fever as a sovereign remedy. Observation and facts incontrovertibly prove the fallacy of such sweeping conclusions, and assure us that such practice cannot at all times, and under all circumstances, be pursued with like success. In my own humble opinion, reasoning from my experience in the seven days' fever, as well as from other types of the disease which have come under my notice, as also from the accounts which are given of febrile visitations in recent times, the following conclusions are deducible—viz. 1st. It is always important to carefully study the particular nature of the prevailing epidemic, cautiously ascertaining by what effects depletion is followed. 2dly. The class of individuals placed under our care, their previous modes of life, habits, and the external influences to which they have been exposed. 3dly. The age, sex, and temperament of the patient. 4thly. The kind of complication, the particular organ or tissue affected, and whether it incline to the congestive or acute inflammatory form. 5thly. Blood-letting may be always had recourse to with more safety and greater advantage at an early than at a late period of the febrile course, and there is more liability to its evil effects in proportion to the advancement of the disease. 6thly. Those auxiliaries should be premised or employed in conjunction which possess depletive action, or are depressants, and do not so reduce the vital powers. Lastly. Its general abstraction should not be employed where local blood-letting would be sufficient. In this fever its *local abstraction* often effectually relieved the urgent symptoms, especially the head-ache, frontal pain, and sense of uncasiness or heaviness so often complained of at the hypochondria and epigastrium. On referring to the statistics it will be seen that cupping and leeches were employed as follows: In Table No. V., out of 80 cases, 22, or 1 in 3·63, had leeches applied; in Table No. VI., out of 450 patients, 6 were cupped, being 1 in 75; 68, or 1 in 6·62, or 1 in 6½, had leeches to the head; 23, or 1 in 19·56, to the chest, and 16, or 1 in 28·12, to the abdomen. In Table No. VIII., out of 80 cases, 28 were treated with local blood-letting; 14, or 1 in 5·71, to the head; 7, or 1 in 11·42, to the chest, and 7, or 1 in 11·42, to the abdomen. Thus, out of 610 patients now instanced, 168 were locally bled, being 1 in 3·76 of the aggregate.

b. Emetics were decidedly of service; and, after their exhibition, certain of the symptoms, especially that of sickness, was not so urgent. Sydenham highly extols emetics, and says they should always be given when nausea and vomiting, in the initiatory stage, are present. There are conditions, however, which contraindicate their employment, viz. when the patient is stout and plethoric, and when there is much pain and tenderness at the epigastrium. When these were given it was at an early part of the disease,—if possible before reaction had set in; or, if that had taken place, blood-letting was first had recourse to; for, in persons of plethoric habit, there is certainly some degree of risk in exhibiting vomits, and thus producing great fulness of the encephaloid vessels. Again, for the same reason, it is not good practice to administer emetics at an advanced stage of fever, when the cerebral vessels are preternaturally loaded, and when further determination of blood, caused by violent straining, might give rise to rupture and sanguineous effusion. They seemed to be beneficial not only in clearing out the primæ viæ, and thus removing irritative matters, but also by deterging the gall-ducts, as the vomiting was always highly bilious, and restoring the cutaneous circulation, — thus relieving the visceral organs from their unwonted supply of blood. A scruple of the powdered ipecacuanha, with a grain of the tartar emetic in a little syrup and water, or the ordinary wine of these drugs, were given. The solution of the sulphate of zinc also answered very well.

c. Aperients.—Purgative medicines undoubtedly rank amongst the most important remedies in fever, as allowed by most authors who have written on the disease; and when we consider how essentially necessary it is to maintain in proper action the intestinal canal, their virtue may not have been so much overrated. In types of

the sthenic kind, where a depletive form of treatment is indicated, the judicious employment of this class of drugs is frequently attended with the most satisfactory results. Dr. Armstrong used to insist upon the desirableness of having two or three evacuations a day; and several authors of eminence recommend the bowels being opened twice during the twenty-four hours, but no writer of modern times has descanted with so much warmth and decision of opinion on their efficacy in fever as the late Dr. Hamilton, whose treatise is too well known to be more than merely mentioned here. Where there is not much reason to apprehend irritation in the mucous membrane of the digestive surface, and where the type is sthenic, the pretty free use of purgatives is often of essential service, and may sometimes avert the necessity of the more potent and immediate depletive, bloodletting. Those of the saline order are most eligible when given with this view, as the various salts copiously remove the aqueous particles from the blood, and thus are retained its more vital properties, so necessary in the great process of assimilation; hence the volume of the vital fluid is reduced, and the oppressed action of the heart relieved, without so much reduction of the vital powers as results from the active use of the lancet. When it is recollected that in the course of fever the secretions and excretions are not as normal,—that it is desirable to carry off the mucous accumulations from the digestive surface, where the effete matters so abundantly produced are liable in an increased degree to collect, and thus be followed by additional irritation on account of their being absorbed into the blood,—and that the peristaltic action of the bowels, from a loss of the organic nervous energy proper to their muscular coat, becomes impaired,—the use of this description of remedies is at once apparent. Even in the most typhoid cases the gentle action of the bowels should ever be strictly attended to, and kept regular by means of mild stimulative laxatives or enemata. The compound jalap powder,* in doses of a drachm, was very generally given, and with good effect,—it appearing a safe and mild purgative, which cleared out the large bowels of scybalæ which are there apt to collect; and Dr. Cormack also was of the same opinion, and says that he found this powder very safe where there was abdominal tenderness with strong pulse*. The compound colocynth pill, with blue pill, was frequently given, and answered very well. Where a mere laxative was desired, the compound rhubarb pill, or three or four drachms of castor oil, were administered; as a common saline aperient, the ordinary cathartic infusion,† according to the formula of the hospital, was prescribed. In such cases, where the liver was not preternaturally stimulated to a redundant secretion of bile, five or six grains of calomel, or a dose of blue pill at bed-time, and a draught of the cathartic infusion, or a dose of castor oil on the following morning, effectually cleared out the bowels. In some few cases of obstinate constipation, the croton oil, in doses of from one to two drops in a couple of drachms of the castor oil, was employed; but this remedy in fever is better dispensed with where that can be done with convenience, owing to its occasional tendency to produce irritation in the mucous lining of the bowels—a condition ever sedulously, if possible, to be avoided in fever, on account of there being such a predisposition to ulceration along the course of the digestive canal; a lesion to which the French pathologists ascribe all the phenomena of the disease‡. The common domestic enema was often ordered, perhaps more commonly than could with convenience in private practice, such expedients being far more easily available in the wards of an hospital. Enemata are highly valuable on account of the efficient manner in which they clear out the colon, and without being followed by that irritation which medicines at times produce. In order to ascertain when an enema was most indicated I usually had recourse to percussion by means of the pleximeter, as recommended by M. Piorry and my friend Dr. Hughes Bennett. When the sound was dull in the right iliac fossa it shewed that the caput cæcum was distended; hence it

* Pharmacopœia Edin.

* Dr. Cormack's Fever of 1843, p. 160.

† With Senna, Super-Tart. Potash, &c. Pharm. Noscomii Regii Edinburgiensis.

‡ Paper No. IV.

was requisite to give medicines by the mouth, but if there was dulness in the left fossa, with resonance in the right, an enema of starch or oatmeal gruel was ordered, which answered in the most satisfactory manner. When the colon is loaded, purgatives by the mouth will not always empty that gut, and indurated fæces and other irritative matters can sometimes alone be removed by this means. Tympanitic distension was generally treated with enemata, composed of half a cupful of starch or common gruel, with six drachms or an ounce of the spirit of turpentine, or, instead of the latter, one to three drachms of the tincture of assafœtida, which were found signally beneficial.

d. Diaphoretics.—Considering how important an organ the skin is in carrying off the exhalations from the body, the promotion of its sudatory functions is always to be wished for, because interruption of its natural action necessarily throws a greater stress upon the kidneys, and thus these organs being morbidly stimulated to excess of action, their positive lesion may hence be founded; besides, in health, the cutaneous exhalants expel from the body certain effete matters which cannot be retained without vitiating the blood, and thus disposing to organic disease. In the seven days' fever it seemed desirable to induce sweating, because, as previously related, a copious sweat was one of the most manifest indications of the crisis, such appearing as the manner in which nature effected a resolution; and, as Sydenham has well observed, in the administration of our remedies we should give those which produce like effects to those efforts which are spontaneously produced in the body in the resolution of disease,—or, in other words, we should copy nature. There has been a good deal of contention respecting the virtue of diaphoretics, some physicians highly extolling them, whilst others consider them of little more service than as placebos. The acetate liquor of ammonia*, the compound powder of ipecacuanha, and James' powder, in conjunction with hot drinks, were very commonly given and found useful adjuvants; but to say more than this, that they produced any very decided or specific effects, would be affirming beyond what my own experience could substantiate. It is always important that fever patients should not consider themselves neglected, which they would most assuredly do, if without any thing to take: besides a periodical dose not only quiets the mind of the sick, but also ensures the proper attention of the nurse,—a consideration that obtains perhaps more in a public establishment, like an hospital, than with private individuals, with whom there is not that risk of their being neglected.

e. Diuretics.—Respecting the evils resulting from a want of proper action in the kidneys some remarks have been offered in a previous paper.* The frequent loss of functional power in the renal organs in fever is a fact too well known to practical men to be especially insisted upon here. Considering, however, the mischief which is likely to accrue from the not unusal complication of nephritis, or congestion of these organs, the physician is ever solicitous that the secretion be not only given off in full quantity, but of normal character, that is, possessing a due proportion of solid matters—which matters, from the excess of waste that there is in fever, are considerably increased, and if retained cannot fail to exert a deleterious influence. Again, the bladder, sphincter vesicæ, &c. from the morbid impressions made upon the nervous and organic nervous systems, often lose in some degree their proper functions, and, hence, retention of the secretion and its partial absorption; therefore we cannot be too careful in our investigations respecting the voiding of the urine, and its natural characteristics. In the epidemic, the nitrate of potash, in conjunction with the carbonate of soda, or the liquor of potash and a little of the tincture of henbane, given every two or three hours, seldom failed to produce copious micturition. The common spirits of nitric ether, or neutral salts, also answered the purpose. When the urine is acid, as it generally is in fever, it is advantageous to administer an alkali, and no drug seems to answer better than the liquor of potash, added to which may be given the compound tincture of opium

* L'Union Médicale, 26 Août, 1847.

* Paper No. IX.

or of henbane: on the whole, perhaps, the latter is preferable, on account of its having a less tendency to confine the bowels and affect the head. When there was much acute pain over the region of the kidneys, local or (if very acute) general blood-letting seemed highly conducive to the restoration of these organs to their natural functions, and Dr. Cormack says that hot applications, as fomentations, poultices, &c. to the lumbar region, were followed by happy effects. From the congested condition in which the kidneys were so often found on inspection, it is highly probable that if cupping and leeching the loins had been more frequently adopted than they were it might have been with advantage.

f. Mercurials.—The employment of mercury in fever has, by various authorities of eminence, been much recommended, but whether it possess that great virtue which some have ascribed to it is very doubtful, and certainly the question is quite open to controversy. Its advocates contend that it stimulates the capillaries; and thus, upon the Cullenian theory, by overcoming their constriction tends to resolve the disease. Dr. Hamilton, of Lynn Regis, affirms that small and oft-repeated doses of mercury and opium have the effect of equalising the circulation, and thus preventing local congestion. When administered with a view to its alterative qualities there is one fact not unfrequently witnessed—viz. the difficulty that there is in affecting the mouth when the skin is hot and dry, and the pulse frequent, and certainly, if it be beneficial in fever, such does not become manifest until some degree of salivation is produced. When given as an alterative, whatever preparation of the mineral may be selected, opium is administered along with it, and there are good reasons for believing that the beneficial results which follow are not wholly attributable to the mercury, but may be partly ascribed to the opium, as neither, given alone, answer so well: this opinion is held by Dr. Alison, whom I have repeatedly heard express it as his conviction. The soothing influence of calomel and opium lessen the nervous irritability, and thus the effect is extended to the circulation, which is rendered more tranquil and natural. The calomel or blue pill are of eminent service in emulging the liver, and stimulating the biliary apparatus to more energy of action, but when that viscus was so preternaturally stimulated as it was in the seven days' fever, the exhibition of mercurials seemed contra-indicated. When employed as an alterative, the following form was very frequently used in the wards, of which can now be most particularly spoken of—viz. twelve grains of calomel, three of powdered opium, in conserve of roses for eight pills, one of which was taken every six hours, or three grains of blue pill with quarter grain doses of opium at the same periods. Small doses of the mercurial chalk powder, with rhubarb and soda, answered in promoting the secretions, and it may be added that these drugs are highly valuable in fever on account of their safety; the gentle action which they maintain in the canal, without being followed by irritation, and when there is tendency to ulceration in the mucous membrane I am convinced that this combination is particularly eligible. Blue pill and colocynth with hyoscyamus was efficacious, and, when not contra-indicated, five or six grains of calomel, followed by a dose of castor oil, was often used. Calomel, in conjunction with the gum camphor, as recommended by Dr. Copland, was, I believe, prescribed when there was sinking of the vital powers, but of this mode of treatment in the seven days' fever I cannot express much from personal experience. It is no doubt an excellent formula in truly typhoid cases, and in that fever I have seen the mercury and camphor freely used. Mercury pushed to salivation has been considered as a prophylactic for fever—a doctrine exceedingly doubtful, and certainly not at all times borne out by facts, because individuals who have been under salivation for syphilis have been known to contract a fever.*

g. Rubefacients, Blisters, &c.—To excite the external vessels to an increase of action, will, of course, on the principles of derivation, be likely to relieve the deeper-seated structures of their preternatural fulness; and thus it may be said that, by instituting a new affection, nature is allured from that which had morbidly preceded. In

* Drs. Copland and Graves.

some instances, where there is much irritability in the system, the application of any irritative agent, instead of being followed by any marked benefit, is only productive of further disturbance; this, however, is not very common (except in the very young), and where such remedies as bloodletting or other depletants have been employed. When the high temperature and quick pulse are on the decline, and nature rather requires stimulation, it is at such stage that this order of remedies is indicated and found of service. Hot applications, as dry flannels, heated bran and salt, flannels wrung out in hot water, and applied to the painful part, were often used; and after fomentation had been employed, sprinkling the flannel with spirits of turpentine was not unfrequently succeeded by great relief. It may here be observed, that I have always known wet or moist applications far more effective than dry; perhaps the heat is more intimately brought in contact with the surface, or that the relaxation is more favoured by the absorption of aqueous particles into the capillaries, which thus dilate their contents, tend to overcome their constriction, and promote their circulation. Many times, in cases of spasm, I have known hot bran, hot salt, &c. of little service, whilst, on the contrary, efficient fomentation has immediately produced signal benefit. Sinapisms to the epigastrium, hypochondria, hypogastria, &c. were had recourse to often with advantage. Croton oil rubbed over the stomach, hypochondria, &c. night and morning, until an eruption appeared, which, by acting as a mild and continuous blister, was of great utility. The common fly blister was extensively ordered to different parts; and in many instances of cephalic affection, sometimes where there was subsultus and other unwelcome symptoms, a large blister to the vertex was very advantageous, and procured much benefit.

h. Medicines employed in the prevention of vomiting. — In an earlier paper of this series,* the reader may perhaps remember that sickness and vomiting were, during the first days of the febrile paroxysm, frequent symptoms, and sometimes so persistent as to be quite distressing to the patient. The effervescent powder, in milder cases, was prescribed, and found of service. One or two grains of powdered opium produced relief when the affection was very urgent and long-continued. Creasote, in doses of four or five drops in a little water, or syrup and water, had the best effects, occasionally removing the symptom at once. Prussic acid, in one or two drop doses, administered in a little of the solution of gum arabic, syrup, or other bland liquid, answered very well. When the vomited matters were very bilious, and unaccompanied by pain and tenderness in the hypochondria and epigastrium, five or six grains of calomel, followed by a dose of castor oil, rhubarb, or the cathartic infusion, would arrest the affection. The most beneficial remedy was one used by Dr. Alison, and which I saw in numberless cases employed with essential service during the time that I had the care of that gentleman's patients in the clinical wards: this was from forty to sixty drops of the solution of morphia in two or three ounces of starch gruel, given as an enema; in fact, the prescription seldom failed in producing an immediate and beneficial effect. There is, as previously observed, an advantage in administering medicines by the rectum, and especially in a case like that of distressing sickness, when the mucous membrane of the stomach has become so morbidly irritable as to reject the most simple matters, and much more so those of a medicinal nature. Impressions produced at either extremity of the intestinal canal are readily transmitted throughout its entire course, owing to the continuity of tissue and the interlacement of nervous filaments; and thus it is that a sedative being applied at the inferior extremity of the digestive surface, would be communicated to its distal parts. Again, the intense irritability of the prima viæ might prevent the absorption of agents submitted to their surface, and thus the system be more tardily brought under their influence. This, however, was a method that might, in like instances, be safely tried, and with much surety of being followed by manifest advantage. Hot cloths, cupping, leeches, sinapisms, fomentations, blisters, &c. were also at times employed.

i. Astringents.—These remedies were of course occasionally demanded.

* Paper No. VI. Section VI.

When diarrhœa seemed dependent upon the irritative properties of the bile, a secretion, it must be recollected, very often given off in a morbidly increased manner, the compound chalk mixture, as also the compound chalk powder with opium, were of much service. When dysenteric symptoms were manifest, the superacetate of lead, in the form of mixture or pill, or small and oft-repeated doses of calomel and opium, were prescribed. Catechu and kino were employed with advantage. Enemata with laudanum also were ordered. In some cases, where there was increased secretion of the bronchial tubes, the preparations of squill and acetate of lead answered the desired purpose.* In certain instances, where there was copious and continued sweating, with a laxity of the skin, the aromatic or diluted sulphuric acid, in doses of from ten to twenty drops, had the power of astringing the cutaneous exhalants; and if griping was produced, the addition of the compound tincture of opium or henbane checked such tendency.

j. Tonics. — During convalescence tonics were highly valuable in promoting the restoration of health; and in a debilitating disease like fever, the digestive organs become so weakened, as to be long unequal to their proper functions; hence such medicines are of essential service. The infusions of gentian, calumba, and cascarilla; the mineral acids along with a little of the syrup of ginger or orange peel; the sulphate of quinine in mixture with the diluted sulphuric acid or in pill with the extract of gentian or chamomile, all had satisfactory effects. In cases of hepatic affection, the nitro-muriatic acid was valuable. The preparations of iron, as the sulphate, tincture, &c. in conjunction with some convenient adjunct, were prescribed. During the intermissions of the fever I tried if the use of quinine would prevent the recurrence of the relapses, but without arriving at any decisive conclusion; such experiments of course being prompted by the anomalous fever presenting certain though ill-defined characteristics of the intermittent type.

k. Stimulants.—All descriptions of wines, spirits, and malt liquors, were at times given; but those most frequently in use were port-wine, porter, whiskey, and ale. When a powerful stimulant was indicated, hot whiskey and water was ordered, because it possesses all the stimulative qualities of brandy, and, especially in Scotland, is much cheaper. Port-wine was extensively used, and with much benefit. Often have I seen the tongue coated, and the patient remain *in statu quo*, when four, six, or eight ounces of wine daily have produced the most marked results, the organ becoming cleaner, the skin softer, the pulse slower and more natural, and the general strength improved: in fine, the patient has then rapidly recovered. It must be remembered, however, that from the statistics which have been given, a great majority of the patients who sought admittance into the Edinburgh hospitals were the squalid and often half-fed inhabitants of the courts and wynds of the Old Town, whose pale visages and delicate frames contrastedly differed from the rural poor; and this fact was quite in accordance with the prevalent notions that patients in urban communities will ever, *cæteris paribus*, need a more stimulative mode of treatment than those from country districts; but independent of this, the type of the fever demanded a more stimulative class of remedies than epidemics which had occurred some years ago,—a statement not only borne out by comparing the present forms of fever with the sthenic types that used to occur, but by the testimony of those physicians who have witnessed many visitations of fever. Dr. Alison informed me that, many years back, the late Dr. Gregory, at the request of the Board of Managers of the Edinburgh hospitals, with a laudable view to economy, was induced to ascertain if whiskey and water would not equally supply the place of the more expensive port-wine. Dr. Gregory, after an ample trial, came to the conclusion that whiskey would not answer so well as wine. There is some difficulty, after a few doses, in prevailing upon the patients to persevere in taking the spirit and water, a circumstance which does not in like manner obtain with the wine; besides, the latter is by far more grateful to the capricious palate, is not so liable to disorder the stomach, and appears better calculated to insure the effect desired. During convalescence wine and porter were often ordered as tonics, and with

* Professor Henderson, Dr. Cormack, &c.

much advantage, especially in the instanee of confirmed tipplers, who improved much more rapidly under a moderate allowance of their wonted stimulus. Porter, by eontaining a grateful bitter, and not possessing so much saccharine matter as ale, was more extensively used; besides, it was less liable to produee disorder in the stomach and bowels. In private practice the Indian beer is on this account, very eligible. In table No. VI. it is seen that out of 450 patients, 123, being 1 in 3·65, or 1 in 3½, or 2 cases out of 7, required wine, and 37, or 1 in 12, had spirits. In table No. VIII., out of 80 cases, 10, or 1 in 8, had wine; 8, or 1 in 10, spirits; and 10, or 1 in 8, ale or porter;—hence, out of 530 cases, 1 in 2·81, or nearly 1 in 3, required stimulants, and, as many were allowed stimulants after they were removed to the eonvaleseent wards, the average might be stated as still higher.

l. Drinks.—So long as the febrile paroxysm eontinued, the patients were, as might have been anticipated, craving for drinks; but as the temperature of the body was often so very high, the thirst was perhaps more urgent than usual. It is always desirable to allow, if possible, such beverages which, if taken in large quantities, might not disorder the stomach and bowels. Toast-water, barley-water, cold gruel, tea, the mineral and vegetable aeid drinks made aecording to the formulæ* of the hospital, were generally used. Dr. Cormack gave some of his patients, when the thirst was very great, the crystals of eitric acid to suck, whieh considerably lessened the desire for liquids. Patients in the higher ranks of soeiety can, of eourse, be allowed many other descriptions of beverage whieh ean be taken with safety, and have the advantage of being pleasant to the taste, as lemonade, iced waters, orange water, &e., which, as the reader is aware, in public institutions, are, on aeeount of the expense, beyond the reach of the inmates. On the whole it is desirable that the patient should not drink too copiously, lest disorder in the stomach and bowels should ensue.

m. Diets.—With respeet to the diets, these were of eourse altered aeeording to the state of the fever, its duration, degree of intensity, eomplication, &e. In the time of the febrile paroxysm, a non-stimulating diet was ordered, and improved as soon as that could be done with safety. When the patient became convalescent, soups, strong broths, animal food, &c. were allowed. It is always incumbent on the part of the physician to be particularly solicitous respeeting the food given to fever patients, as there is no doubt whatever that the most serious, nay fatal terminations, result from being too venturesome in permitting them to return to the stronger and more indigestible kinds of food. In cases of typhus I have repeatedly known aggravations of the disease resulting from this error, and in some instances death was traceable to such eause.

n. The application of cold.—Before concluding those observations on the eurative measures adopted in the distemper, the use of cold applications may be briefly adverted to. The late Dr. Currie, as the reader is doubtless aware, has been one of the most strenuous advocates of this method; and there is no doubt, when used aceording to proper preeautionary rules, it is highly to be commended. Its indiseriminate employment would be exceedingly injurious, nor could it fail to be at times productive of the most serious eonsequences. When the temperature of the body is very high, when the pulse is full, quiek, and bounding, the patient restless, and the skin feels hot and tingling to the touch, sponging with tepid or eold water is generally followed by much benefit, and the patient becomes so eool and comfortable as to frequently fall over into a tranquil and continuous sleep, from which he wakes eomposed and refreshed: this was often the ease in the epidemic. In the employment of this remedy the feelings of the patient will ever be our best guide, and if it be grateful, it may with great hope of benefit be used; but if on the contrary, and he afterwards feels chilly, has headache, small pulse, we may rely upon it that the measure would have been better omitted. It is at an early period of the disease when eold seems to be most indicated; during the stage of reaction, when there is high vascular exeitement, and consequently a preternatural degree of animal heat, it then will seldom do harm, but rather be followed by benefit. In some instances in whieh there was

* Paper No. V.; foot-note to Section No. II.

much cerebral affection, pouring a continuous stream of cold water over the shaven scalp was productive of much advantage. Dr. Hughes Bennett informed me that the douche was very commonly employed in the Continental hospitals, especially in the Hôtel-Dieu, La Charité, and at Vienna and Heidelberg, of which he could speak from personal observation.

Such is a brief enumeration of the chief measures adopted in the treatment of the seven days' fever; and in this detail it has been endeavoured to generalize from the practice of the several physicians who had the charge of the patients in the various establishments, rather than to give the isolated treatment of one individual; and in thus presenting this general view of the curative means, it would of course have been impossible, without prolixity, to embrace all considerations associated with this particular part of the subject. It is, I am aware, the fashion in these days to imitate the now too prevalent custom of the Gallic physicians, who well nigh concentrate the whole of their attention to the study of the pathology, and the morbid appearances discoverable after death, rather than to therapeutical researches. It is true that, after having gained a correct knowledge of a disease, the main difficulty is overcome; and it is equally true that such acquired knowledge is only useful so far as it can be brought to bear in the prevention or cure. In the treatment of this disease as in all others, no trite and undeviating rules can be laid down, and much must ever necessarily be left to the discretional powers and common-sense conclusions of the practitioner; and it must also be confessed that, in our treatment of this affection, measures prompted by the deduction of theory and defined speculations do not always appear as efficient and correct, whilst facts often force themselves upon the mind exemplifying the wonderful efforts of nature alone, convincing us of the potency of her own powers in the restoration of normal action, or, in other words, in the re-establishment of lost health. Where she seems unable to follow out her own salutary course of procedure, it is ours to narrowly observe in what these means consist, the manner in which she appears to accomplish her ends, to remove such obstacles as obstruct her course, and, copying her efforts, tender that assistance of agents which science has discovered, observation led to employ, and the long course of human experience taught as the best to be administered.

No. X.

Lastly, conclusive Remarks.—Previous to the termination of these papers, there are some considerations, perhaps, to which a brief advertence might not inappropriately be made. From what has been said in the foregoing pages, it must be granted, on the part of the reader, that the affection which it has been attempted to describe possessed characteristics of a truly novel description; and those distinguishing features were such as to render it positively unlike any epidemic that has hitherto prevailed in these islands. The mode of invasion,—the kind of maculæ,—the great proportion of jaundiced cases,—the well-nigh, if not invariable, occurrence of relapse,—the unusually quick pulse, unaccompanied with a commensurate degree of severity of other symptoms, as observed in forms of fever with which we are more familiar,—the constant abortions or premature deliveries which it produced in pregnant women,—the spontaneous resolution at an early period effected by a powerful diaphoresis, which fully and unequivocally, in a short space of time, terminated the febrile paroxysm,—together with other peculiarities previously mentioned, showed the distemper to be anomalous, and without precedent. Conceding, then, that it did in its manifest characteristics broadly differ from the affection commonly termed typhus, it follows also, as a rational inference, that the first causes must also have essentially varied, or, in other words, that the two forms were produced from poisons possessing dissimilar and distinctive qualities, because, as remarked, their cognizable effects were unlike. And it is from the effects alone that we are enabled to judge of many natural agents, and much more so, when such agents are of so subtile a nature as to elude the acutest and most refined modes of inquiry as to their ultimate properties; and because the system, after having passed through this fever, was quite as susceptible of contracting the ordinary typhus. Almost all agree that the poisons giving rise to the exanthems could never, under any modification of external influences or personal peculiarities, produce typhus; and *vice versâ*. It is true that a case of malignant small-pox may assume a typhoid form,—at least, a state which nosologists please to designate under that appellation (by way of perspicuity, and in order to obviate misconceptions, the condition now spoken of might more happily be recognised under some other term; for the want of succinct and clear definitions in medical phraseology, by confusing the meanings intended to be conveyed, is not only in itself an evil, but may cause a greater error in practice),—yet such would not be idiopathic typhus, because the phlegmasiæ will occasionally run on to the same state, and because the poison, if contracted, would not give rise to typhus, but variolous fever. A patient very recently came under the writer's notice who had scarlatina, and during convalescence became exposed to the infection of typhus, which she contracted, and passed through the course of that disease in its ordinary form, as if the one affection produced its phenomena in the system quite irrespective of the other. Some author of eminence, when discusing this point, and contending for the oneness of cause of all denominations of fever, asserts that he has known an exanthematic fever produce typhus. An isolated case is quite insufficient to form the basis of a doctrine so important; and it is highly probable that in this single instance there were means whereby the true typhoid poison might be communicated, although they were not discovered: and it is much more conclusive as to the truth of the opposite doctrine, when innumerable cases might be cited in its support. Those authors who have contested for the fundamental identity of all descriptions of fever—that is, of their origin from one poison—have done so rather by rearing their theories on hypothetical assertions, than founding their doctrines on the unassailable basis of facts. It is this kind of argumentation which impedes the progress of

science, by encumbering her path with vague and speculative notions, instead of rigidly appealing to facts, and taking the data of impartial observation for our guide. External influences, and the idiosyncrasies of the patient, it is true, will always cause some degree of modification: they may exert an influence on the development of symptoms, and predispose to this or that complication; but they cannot alter the essential nature of the disease; and, when a generalization is made from a considerable number of cases of fever, it will always be found that there are cardinal and characteristic symptoms distinguishing the type of the fever, however sometimes masked or rendered apparently different, from the operation of such influences, and particular conditions of the body. It would be exceedingly difficult—nay, impossible—to construct a nosological nomenclature to embrace all hues and degrees which, under varied circumstances, diseases are liable to assume; and therefore the classifications of disease particularly apply to general facts, comprehending the most marked and representative symptoms. Cullen erred by endeavouring too much at minuteness and perfection in his system, and sometimes by making facts bend to his preconceived theories. Gregory, Bateman, Perceval, Armstrong, and others, have objected to this great nosologist's subdivision of continued fevers, from the conviction that they are not met with in distinctive forms; and the former asserted that, during an extensive practice of thirty years, he never met with a pure case of synocha,—a statement, however, which was perhaps going too far, as we do occasionally meet with affections of a febrile character bearing a very near, if not a positive, resemblance to the species of fever enumerated under that head by Cullen, and which that great observer must have taken as his standard. By the general acceptation of the term typhus, we recognise a disease which manifests as a predominant feature debility, accompanied by considerable impairment of the sensorial functions, vitiation of the secretions, rapid diminution of the solids, &c.: hence, to designate fevers of a simple and uncomplicated form by that more grave appellation, would not only be a nosological inconsistency, but calculated to lead to mischievous results. Some physicians have believed that the only real difference in fevers of the continued form is in the degree of intensity of their symptoms,—a doctrine which, if reflected upon, is untenable, because some fevers run a mild course throughout the period of the epidemic visitation, with scarcely any tendency to institute inflammatory complications, whilst in another visitation the type may be far more malignant, and local affections exceedingly common, doubtless depending upon the essential qualities of the specific poison, because one set of organs may at one time be little, if at all, affected, which at another will be almost invariably diseased, and because the many facts given during the time of the seven days' fever, and which have been detailed in these papers, incontrovertibly give proof of the contrary. Throughout the interminable field of nature we see variation to infinitude, different laws, contrivances, and constructions,—differences in the adaptation of means to ends,—differences that point out the most obvious distinctions; nor can it be matter of surprise that there are differences in disease,—that affections may, superficially reviewed, resemble one another, yet be radically dissimilar, and that the causes be as various as the symptoms disagree. In the fever now treated of, although it was of the continued kind, it could not with correctness be said that its characteristic diagnostic marks placed it under the class of synochus or typhus, nor did it coincide with our notions of synocha. What, it might be asked, could be more conclusive of the ex prima causa disagreement of the two forms of fever now spoken of—viz. the common typhus and the seven days' fever, than that within a short space of time, occasionally even during convalescence of the one succeeding the other; both forms existing simultaneously in the same locality,—nay, in the same house, and the same family,—that the most obvious and distinctive characters broadly distinguished them,—never rendering it a matter of doubt as to their identity,—that they never became inextricably blended,—that even nurses and non-professional people could often say which was a case of short fever, and which was typhus,—and that most,

if not all, of those cardinal symptoms by which nosologists designate typhus, were wanting in the new distemper, and unequivocally apparent in the disease with which we are more familiar? It has generally been regarded as, and appears to be, a law in the animal economy, that external agents which, when first taken into the system, produce considerable effect, lose their power by repetition, either by the system, after having been preternaturally excited by such agents, becoming less susceptible of their power, or by better accommodating itself to those agents —a fact which we know to be substantiated by the exhibition of medicines: and thus it is with regard to the specific poisons giving rise to the various forms of febrile diseases; after having exerted their power, the body, for a shorter or longer period, has little or no tendency to receive the agent, or re-institute that morbid action which constitutes its repellent efforts: in typhus the immunity is considered to last for several weeks or months; in the exanthems during the remainder of life. It is undoubtedly on this general principle that vaccination renders milder, or averts a disease, which, if it be not identical, may be presumed as very analogous. If the nosological classifications of diseases could be founded more upon the radical pathology than they have hitherto been, or, in other words, were the classes arranged more with reference to the causes of symptoms than the symptoms themselves, the conclusions would, in a theoretical point of view, be more philosophical, and in practice more certain and correct; but, as previously remarked, it is the want of this precise information which has given rise to many apparent and real discrepancies amidst those who are accounted standard authorities. When we see certain organs the seat of lesion in one febrile attack affected, in another scarcely or not at all complicated, when the pathological distinctions during the progress of the malady differ, we of course conclude that their causes must vary. Visceral complications in typhus some have endeavoured to account for as mainly dependent upon casual circumstances, and there is little doubt that previous disease in an organ or organs would, under the general disturbance of fever—which, it must be remembered, powerfully predisposes to the inflammatory state—have a great proclivity to assume true inflammation; but when a general review is taken of hundreds of cases, and a common pronencss is observed towards the development of peculiar or particular symptoms, we are obliged to attribute such to qualities in the essence of the fevers, and thus admit that their first causes may be unlike. It might be advanced that two attacks of acknowledged typhus may present so much apparent diversity in their symptoms—not merely in degree of intensity of such symptoms, but as if in their ultimate nature—as to appear positively diverse, yet upon a careful summing up of facts, there would be certain residuary symptoms arguing unanswerably as to the oneness of their cause, and assuring as to their real identity: in other forms of disease the degrees of intensity of symptoms would almost impress us with a belief of their being two and opposite diseases—that is, if superficially considered. In recapitulation of what has been said, and in order to supply certain facts corroborative of the doctrine maintained, the following propositions may be advanced, viz.:—1st, *What were the proofs supplied by this epidemic that all varieties of fever do not proceed from one cause, but are produced by different specific poisons?* 2dly, *What were the distinguishing diversities between the epidemic and typhus?*

1. Bateman, Southwood Smith, Marsh, and others, as well as the Brunonians, contend for the identity of cause of all denominations of fever, but without supplying sufficient data to give irrefragable testimony to their doctrine. To accede to the position maintained by these authors would be inconsistent with what we know of innumerable authenticated facts. Previous to the occurrence of the epidemic which has formed the subject of these papers, there was perhaps more room for disputation relative to the question, it must be allowed; but since that febrile attack the point appears conclusive, and whatever other practical information may have been gained by those who studied the phenomena of that fever, it seemed undeniable that continued fevers are not identical in their essence, that is that they have their origins in different causes, or spe-

cific poisons. It is no more inconsistent to think that there are various specific poisons giving rise to diverse forms of continued fever, than that the poisons producing these, and those causing the exanthems, should be different, and it has only been from the want of conclusive evidence to establish the doctrine of non-identity that the hitherto most generally received etiological reasonings have been erroneous. If fevers proceeded from one poison, the dissimilarity of types, often constituting important pathological features, would be difficult to account for, on the notion of extraneous influences; there would be more sameness in their phenomena, nor would the often oppositeness of characters be so apparent. When small-pox, scarlatina, or measles, prevail epidemically, cases of typhus are then more rare, or wholly absent, and, *vice versâ*, one or other of these distempers may prevail, decline, and be succeeded by another, but they seldom, in the same locality, rage simultaneously; as if it were a law amongst infectious diseases that only one should occupy the field at a time. During the height of the epidemic visitation there were scarcely any cases of typhus in the wards of the Edinburgh and Glasgow hospitals, whilst small-pox, scarlet fever, &c. were well nigh entirely absent, fully maintaining the assertions now advanced. As the seven days' fever declined, typhus increased. In January 1844, out of 450 cases of fever in the Edinburgh hospitals, there were only 24, or 1 in 18·75 of typhus, but about four months later, when the seven days' fever was on the decline, the proportion of typhus cases was far greater, for, as seen by the following Table, out of 159 cases of fever, then in the various establishments, 65 of that number were undisputed typhus, being 1 in 2·44 instead of 1 in 18¾; and on the 1st of June the total of epidemic cases had decreased to 33, whilst the typhus cases were 59: thus the latter being almost double the former.

Table No. IX.

This table shews the exact number of epidemic and typhus cases in the various establishments on the 15th of April, 1844; also the number and manner in which the two forms of fever succeeded each other.

IN THE VARIOUS WARDS OF THE EDINBURGH ROYAL INFIRMARY.

Wards.	Males.	Females.	Typhus.	Epidemic.	Epidemic Cases succeeded by Typhus.	Typhus Cases succeeded by Epidemic.
No. 2	Males	—	8	7	2	—
,, 3	do.	—	6	9	1	1
,, 5	do.	—	1	10	—	—
,, 7	—	Females	—	10	—	—
,, 8	Males	—	—	5	—	—
,, 9	do.	—	2	—	—	—
,, 12	—	Females	6	7	1	—
,, 16	—	do.	8	5	2	1
Fever-house A. Wards.		IN THE EXTRA FEVER HOSPITALS.				
No. 1	Males	—	3	4	—	—
,, 2	do.	—	8	5	—	—
,, 3	—	Females	1	1	—	—
,, 4	—	do.	2	4	1	—
Fever-house D	—	do.	20	27	5	2
			65	94	12	4

Males	68
Females	91
Total	159

Out of the number of patients given in this table it is seen that in 12 instances the epidemic had been succeeded by typhus, and four of typhus

succeeded by the epidemic. Dr. Henderson became fully convinced of the non-identity of the forms, and paid special attention to the investigation of this interesting point. From February to September he saw but 39 cases of typhus; the histories of 29 of which were carefully taken, and in four only out of the whole number was there any doubt as to the infection being derived from patients having the seven days' fever. Upon full inquiry relative to these four doubtful cases, it was proved that previous to their illness they had been where the measly typhus prevailed, or there were such circumstances connected with their previous history as to render it probable that they might have contracted the disease. One instance, and which Dr. Henderson quotes, I well remember, and was in the person of a night-nurse who came from the country, and acted in that capacity in Ward No. 13, in which there were no patients except those labouring under the epidemic. This woman, however, took typhus, a circumstance which at first seemed to militate against the notions of essential dissimilarity which, amongst certain parties, were now entertained. Upon inquiry it was discovered that a short time before becoming indisposed she had washed the linen of a patient belonging to another ward, who had died of malignant typhus, and thus the apparent anomaly was satisfactorily explained away. The remaining three cases were also fully accounted for. There was one family the members of which had both fevers; and as this illustration forms one of the best examples of what it is now endeavoured to prove, the particulars may here be concisely detailed. This was in the family of a Joseph Dempster, 32 College Wynd, Edinburgh.

1. Ann Dempster, (daughter) æt. 14, began in epidemic Dec. 13th, and was dismissed 26th, 1843; April 20th, admitted with typhus, and dismissed May 15th, 1844.

2. Joseph Dempster, (father) æt. 52, began in December 27th, 1843, with epidemic; dismissed at the end of three weeks, remained out six days, when he relapsed, when he was re-admitted, and at the expiration of other three weeks was finally discharged. April 28th, was again admitted with exanthematic typhus, and dismissed May 17th, 1844.

3. Jane Dempster, (wife) began in epidemic January 2d, discharged on 27th, remained out three days, was re-admitted with typhus, and finally dismissed March 31st, 1844.

4. Elizabeth Dempster, (daughter) æt. 23, had epidemic in January, 1844; remained in hospital three weeks.

5. Jane Dempster, (daughter) æt. 7, admitted with epidemic January 7th, dismissed the 23d. March 10th again admitted, having now typhus; discharged April 8th, 1844.

6. Joseph Dempster, (son) æt. 18, admitted with epidemic January 20th, 1844, and remained in hospital five weeks.

7. James Dempster, (son) æt. 8, admitted in epidemic February 12th, discharged March 10th; re-admitted April 24th with typhus, and discharged May 14th, 1844.

8. Maxwell Dempster, (son) æt. 3, had epidemic in February; April 16th, commenced in typhus, from which he became convalescent after three weeks.

Referring to the above, it will be seen that each of the individuals had the epidemic, and that six out of the eight had typhus. The longest period of intervention (in the instance of Ann Dempster) was seventeen weeks; in the case of Jane Dempster, (the mother) but three days. In order to have more extensive data on this point, the annexed table was compiled.

From Table No. X. (see next page) the following particulars are deducible, viz.:—

1 case	where typhus manifested itself within	1 month.
6 cases		2 months.
10		3 „
4		4 „
3		5 „
2		6 „
1 case		7 „
4 cases		9 „
1 case		10 „
32		

One half before 3 months, and two-thirds before 5 months.

TABLE No. X.

Which shews how the fevers succeeded each other in a short space of time.

No.	Name.	Age.	Male.	Female.	Date of attack of Epidemic.	Period of intervention between the two attacks.		Date of attack of Typhus.
						Weeks.	Days.	
1	A. D.	14		Female	Dec. 13, 1843	18	3	April 20, 1844
*2	J. D.	52	Male		Jan. 23, 1844	13	5	,, 28, ,,
3	J. D.	48		Female	,, 2 ,,	4		Jan. 30, ,,
4	T. D.	7		,,	,, 7 ,,	9		March 10, ,,
5	J. D.	8	Male		Feb. 12, ,,	10	2	April 24, ,,
6	M. D.	3	,,		,, 4, ,,	10	2	,, 16, ,,
7	A. W.	28		Female	March 6, ,,	8	5	May 6, ,,
8	J. W.	45	Male		Feb. 1, ,,	9	3	April 7, ,,
9	E. M.	22		Female	March 16, ,,	9	4	May 22, ,,
10	M. H.	25		,,	Nov. 4, 1843	7	5	Dec. 28, 1843
11	J. A.	20		,,	,, 10, ,,	24	1	April 26, 1844
12	A. M.	16		,,	Dec. 20, ,,	17	2	,, 29, ,,
†13	J. F.	44		,,	Feb. 1, 1844			
‡14	E. F.	23		,,	April 13, ,,	5	2	May 20, ,,
15	J. F.	32		,,	Feb. 20, ,,	5	2	March 28, ,,
‖16	E. M.	32		,,	,, 10, ,,	5	1	,, 16, ,,
17	C. D.	31		,,	,, 1, ,,	9	3	April 17, ,,
18	M. J.	4		,,	Jan. 24, ,,	15		May 8, ,,
19	E. C.	10		,,	,, 16, ,,	10	2	March 28, ,,
20	J. D.	27		,,	Sept. 10, 1843	34	1	May 6, ,,
21	T. K.	13		,,	Feb. 7, 1844	12	2	,, 3, ,,
22	M. R.	17		,,	Aug. 11, 1843	38	1	,, 4, ,,
23	H. M.		Male		Nov. 17, ,,	20	5	April 10, ,,
24	H. W.	20		Female	Feb. 6, 1844	16		May 28, ,,
25	H. D.	6		,,	Oct. 11, 1843	32	3	,, 25, ,,
26	D. N.	18	Male		March 3, 1844	9	3	,, 18, ,,
27	M. D.			Female	,, 17, ,,	11	5	June 7, ,,
28	M. C.	29		,,	Jan. 10, ,,	19	2	,, 13, ,,
29	G. B.	28		,,	Oct. 9, 1843	32	3	May 23, ,,
30	J. D.	21		,,	April 1, 1844	7	3	,, 23, ,,
31	H. W.			,,	Dec. 25, 1843	22	6	,, 23, ,,
32	M. G.	10		,,	Oct. 3, ,,	34		,, 28, ,,

This table, which gives the exact dates respecting the time of attack, period of intervention, &c., of thirty-two cases, proves that such was not merely a casual occurrence; and if it had been deemed requisite, a far greater number, in illustration of this fact, could have been supplied. At the expiration of eight or ten weeks seemed to be the time that patients who had passed through the epidemic were most liable to manifest typhus. Whatever may be the arguments adopted by Bateman, Southwood Smith, and others, who contend for the oneness of cause of all denominations of fever, the facts now advanced may, perhaps, in some measure, invalidate, because the two diseases were never inextricably blended—because they were found in the same stair, the same house, and the same room—because the infection caught from patients ill of one description of fever was never proved to produce the other, whilst like produced like in multitudes of instances—because typhus fever never attacks one individual in so short a space of time—because the precedence and succession of the two forms, is, reasoning from what is acknowledged relative to the distinctions of the exanthems and continued fever, a most powerful, and, indeed, an incontrovertible argument,

* This patient was twice admitted into the Hospital with distinct attacks of the epidemic previous to her having the typhus.
† Began in typhus before leaving the Wards.
‡ Began in typhus before leaving the Wards.
‖ Began in typhus before leaving the Wards.

hat the two diseases are essentially dissimilar, and because, as observed when the cardinal symptoms are of an opposite nature, the pathological characteristics markedly distinct, we cannot but conclude that the causes giving rise to such effects also vary. The following is a case in point, and one in which typhus preceded instead of succeeded.

CASE XVI.—*Typhus succeeded (before leaving the wards) by the epidemic, of which the patient had three distinct attacks, before dismission from the hospital.*

James Paterson, æt. 24, a baker out of employment, but not in want; moderately robust; is fully enabled to give a clear account of his illness, and was brought into the hospital by the police yesterday (Dec. 30th.)

Dec. 31st.—Is talkative and incoherent, but occasionally gives correct answers when put to him; no tendency to stupor. The surface is thickly spotted with an eruption, especially over the trunk, hypochondria, and epigastrium. Pulse 138, soft, not feeble, and of moderate size. Tongue dry, but clean. Has had two stools; does not complain of any pain.—Habeat. Vin. Rub. ʒiv.

January 1st, 1844.—Passed a quiet night, and reported to have had a good deal of sleep in the morning. Pulse 130; eruption much as before; tongue soft and moist; pupils of good size; thinks himself better; bowels open.

2d.—Eruption considerably faded; pulse 128, of good strength; much delirium during the night.

3d.—Has had no sleep during the night; has been constantly endeavouring to get out of bed, or be sitting up. Pulse 134; is stupid and obstinate, and will not answer questions when spoken to; pupils pretty large; bowels slow; eruption nearly gone.—℞ Sol. Mur. Morph. ʒj.; Vini Antim. Tart. ʒj.; Aquæ Puræ, ʒij. Misce. ft. Mist. cujus. cap. quartam partem statim et repetatur omni quârta horâ. Enema domestica statim injiciatur.

4th.—Pulse 124; tongue moist and soft; skin soft; eruption gone; is more inclined to answer when addressed; bowels opened twice by injection; slept only two hours, and was in other respects much the same as during the previous night.—Habeat haust. h. s. c. Sol. Mur. Morph. gt. xx.

5th.—Slept well after twenty drops of morphia in addition to his ordinary dose. Pulse 130, of fair strength. Over the lower third, on the posterior aspect of the left lung, there is dulness on percussion, and on auscultation a crepitant râle is heard. Intelligence still confused; skin hot and moist; tongue pretty clean and moist; eyes somewhat staring and expressive of anxiety.—℞ Pulv. Ant. Tart. gt. iij.; Aquæ, ʒvj. Misce, ft. Mist. cap. ʒss. q. q. q. horâ. Emp. vesacator. lateri sinistro applic.

6th.—Slept well, and had no nausea or vomiting from the medicine. Blister has risen well; pulse 116, soft, and of moderate volume; respiration 30 per minute; skin hot, and free from eruption; still stupid and incoherent; has had one stool; unusual resonance of voice continues on the posterior aspect of left lung.

7th.—Pulse 74, of good strength; coughs more; percussion still anormal at lower part of left lobe.

8th. — Pulse 70; respiration and percussion more natural; tongue moist and clean at apex and edges, and but little loaded on other parts; more intelligent, and slept well; no cough nor any other unfavourable symptom.

24th.—Continued to improve from the last report. For several days was walking about the ward, and yesterday while sitting at the fire was suddenly seized with a fit of shivering, and general and arthritic pains; was somewhat restless last night; to-day pulse 134, quick and soft; tongue white and loaded; bowels slow; complains of some pain in the head; expression somewhat confused, and appears as if startled and intimidated; skin hot and dry.—Habeat Infus. Cathart. statim.

25th.—Reported to have had considerable delirium during the night, having talked much but manifested no violence. Began to sweat about 11 o'clock to-day, and is now sweating very copiously. Pulse 180, pretty full; is at present incoherent, and is unable to answer questions; urine mixed with stools, and not seen.—Habeat Vini Rub. ʒiv.

26th.—It is not known how long he continued to sweat yesterday; skin hot and dry; pulse 120; urine passed to 16 oz. very thick and yellowish.

29th.—Sweated copiously during the night; pulse down to 80; skin cool.

Feb. 3d.—Has continued to improve since last report; appetite good; tongue whitish but moist; pulse 80, soft and regular; sweats a little at night. Had castor oil, yesterday by which his bowels were opened four or five times; urine not kept, but is voided in moderate quantity, and deposits a copious pinkish sediment; does not feel any confusion of head, nor has any drowsiness.

4th.—Last night was seized with chilliness and rigors, which were followed by flushings of heat; slept but little; no delirium, nor any confusion of intellect; pulse to-day 116, quick; skin hot; complains of slight frontal headache; tongue furred; bowels not opened since yesterday; urine passed to 36 oz. of a light reddish-brown colour, no sediment. Takes his food without relish.

5th.—Slept pretty well last night; had some sweating; no wandering; to-day pulse 154, soft and small; tongue white; no appetite for food; bowels opened this morning; urine excreted to 36 oz.; in other respects as yesterday; skin moist; answers questions intelligibly, and has no confusion of head.

7th.—Sweated a good deal the night before last; yesterday at visit his skin was cool and moist; pulse still frequent, but soft and regular; expression of countenance somewhat heavier than the day before; answers questions in a confused manner; no particular tendency to somnolency; urine all kept (16 oz.), sp. gr. 1026, with a copious pink sediment, disappearing on heating it gently near the point of ebullition; the urine becomes again slightly hazy, nor is the precipitation dissolved by the addition of nitric acid; bowels confined; tongue whitish. —To have a domestic injection immediately.

9th.—Sleep was somewhat disturbed last night with dreams, and talked a little in his sleep; had some sweating; to-day skin cool; pulse 100, regular; feels well in every respect; quantity of urine cannot be ascertained, having voided it along with his stools; red deposit remains; bowels opened three times from injection.

This man had another relapse before leaving the hospital, making the third distinct attack of the epidemic subsequent to having typhus.

Remarks.—In the first day's report of this man (Dec. 31st) he is said to be talkative and incoherent; and it is stated that the surface is thickly studded with an efflorescent eruption. On the 3d of January, 1844, it is seen that there had been considerable delirium; and from his obstinate taciturnity, it is obvious that his mental faculties were much impaired: and for other three or four days the intelligence was confused. On the 8th, being his tenth day in the hospital, was the time about which was the critical period: and if five or six days be allowed for illness previous to entering the institution (and such would be a fair estimate, as, in typhus, it was generally from four to six days before they came into the wards), the crisis would then be about the fifteenth or sixteenth day of the disease, and not on the seventh, as in the epidemic. Besides, we do not see that the transition from a febrile to a non-febrile state was so sudden and marked as in the epidemic, the change being far more gradual. From that time he steadily improved, and became so far recruited as to be enabled to walk about the ward. He was then again suddenly seized with shivering, and all the other premonitory symptoms of fever. At the expiration of five days, the febrile paroxysm was abruptly resolved by a copious diaphoresis. A non-febrile interval of six days ensued, when the accession of rigors, dry skin, heightened pulse, furred tongue, frontal headache, &c. demonstrated another repetition of the febrile state: and this paroxysm continued for four or five days, and was in like manner resolved. A third attack, characterised by the same phenomena, supervened, and in a similar way spontaneously terminated. This case affords the most distinct and indisputable evidence that the two fevers were radically diverse. We never observe repetitions of typhus coming on in the manner described*, as by rapidly passing through a succession of febrile and apyrexial states, the paroxysms being abruptly ended by a powerful sweat; whilst the exanthematic eruption, the longer continu-

* See Paper No. VIII.

ance, the less observable critical period, the gradual declension, &c. of typhus, broadly characterise it from the seven days' fever.

From the particulars set forth in the preceding tables and case, it would be difficult to arrive at any other inference than that the two forms were in their fundamental qualities unlike; that is, if we judge of causes by effects: and unquestionably in this kind of inquiry we can only determine of the occult nature of the former by the more manifest and cognizable characteristics of the latter. We have seen that the seven days' fever for a long period prevailed to a considerable extent, and that during its prevalence other contagious diseases scarcely at all existed, being exactly in accordance with what has long been observed relative to this particular law in febrile affections,—that in the decline of the one description another set in, spreading in the same districts, the same houses, and amongst the same individuals,—that having passed through the one form was no preventive, or rather perhaps predisposed to the other: and that many other unequivocal proofs were obtainable of the opinion now endeavoured to be maintained. It is before mentioned that the measly typhus in this part of the country* is never noticed. Within the last few weeks (July 1847) two itinerant Irish lads were reported to be ill in fever, and whom I visited. On examining those patients, I felt convinced that they had recently been at some large town where exanthematic typhus prevails. On inquiry, it was ascertained that they had come from Liverpool, and that they had been exposed to the contagion of malignant typhus in a lodging-house: and thus the apparent exception was at once accounted for. There are no reasons for believing that the exanthematic eruption is the inseparable concomitant of a certain degree of malignancy; because although in this part of the country the spots are never observed, I have witnessed many of the very worst forms of the disease where the body has gone into the most putrescent state. Again, the Irish lads, although they presented a well-marked eruption, had the distemper in a mild manner; hence, it is unavoidable to infer that the poisons giving rise to continued fever vary in their essential properties.

2. The few remarks to be offered under this proposition can best be answered by a brief recapitulation of foregoing statements. *a.* Its accession was with greater suddenness than typhus; the latter generally coming on insidiously, whilst in the former scarcely any premonitory symptoms were given. *b.* The rose-red efflorescence never occurred in one single instance amongst the twelve hundred cases which I personally examined of the seven days' fever (which we know to be one of the most indisputable and distinctive diagnostic marks of real typhus), whilst in cases of acknowledged typhus, then in the wards, such was very commonly present: again, the livid petechiæ of the epidemic and the measly spots never simultaneously existed. *c.* Copious diaphoresis invariably at an early period resolved the one, while it did not the other; or, when it did appear in typhus, it was the sure harbinger of unwelcome symptoms. *d.* A considerable proportion of the epidemic cases became intensely jaundiced; in typhus, such but occasionally occurs. *e.* In the one they invariably relapsed without any exciting cause, often to the second or third, and sometimes even to the fourth time; each successive attack being distinguished by a repetition of primary symptoms, and the whole train of phenomena, as observed in the first febrile paroxysms: whilst in the other, such returns are but an aggravation of existent symptoms, very generally traceable to, and always produced by, some excitant cause, and not spontaneous repetitions of the primary febrile state. *f.* Not one single instance could be discovered in which a pregnant woman, labouring under the epidemic, did not abort, or was prematurely delivered; whilst pregnant females then in the wards, and affected with typhus, went through their natural period of gestation. *g.* The mortality of typhus is generally twice or three times greater. *h.* The rapidity of convalescence in the one was much greater than that of the other. In typhus, the patient gradually improves, and the febrile symptoms disappear by degrees, often con-

* Pickering, Yorks.

suming a third of the whole time of illness; in the epidemic a few hours, or even less, sufficed to effect a total and unequivocal cessation of the febrile state. Contrasting these particulars the one with the other, in conjunction with additional statements which have been advanced in these papers, we cannot but arrive at the conclusion before contended for, that they were not identical.

Throughout the entire period of the epidemic visitation the fever preserved an evenness of character, without manifesting any variation in its leading features. The following, and last case to be given, is one that was taken about the decline of the distemper.

CASE XVII.—*Shewing that the epidemic was characterised by the same symptoms at its close as at the commencement.*

Andrew Goodall, a weaver, æt. 20, a native of Selkirk, where he was exposed to the contagious influence of the epidemic. First began to feel unwell on Friday morning last (May 31st), having then had shivering, which was followed by pain and dizziness in the head, aching of the limbs, weakness in the inferior extremities, and loss of appetite. He walked to Galashiels that day, and on his journey he bathed in the Tweed; after which he fancied he was better for a short time, but during the night the headache increased, had much perspiration, and did not get any sleep. On Saturday morning took some Epsom salts, which did not operate until evening: the headache continued, and alternate chilliness and flushings were experienced through the night. On Sunday morning felt much pain in the chest upon taking a full inspiration; had much soreness over the body generally, but especially an aching pain over lumbar region: had frequent desire to void urine, which was passed in very limited quantity. He again passed a restless night, and perspired much. Continued the same yesterday, but slept better last night.

On admission (June 4th), complains of an indistinct dull pain in the head, with great giddiness upon standing up or raising himself in bed. On attempting to move feels much soreness, and a sense of aching weakness over small of back and in inferior extremities. Pain in chest is now very slight, and can take a full inspiration with little sense of pain or tightness. Bowels soluble; tongue moist and clean at edges and apex, but rather dry and a good deal furred in centre; no sickness or vomiting; skin hot and dry; pulse 100, of tolerable strength.

6th.—Perspired a good deal last night, and towards morning slept soundly for some hours; urine passed copiously; bowels open; tongue more natural.

7th.—Slept well; tongue moist; bowels open; urine voided normally; expresses himself as being better; skin cool and moist; pulse 58, of good strength.

8th.—Slept well last night; bowels open; tongue cleaner; pulse near the natural standard.

9th.—Continues to improve: ordered common diet.

11th.—Dismissed cured.

REMARKS.—It is almost superfluous to offer any observations on the above example. The initiatory symptoms, as compared with those of No. I, were very similar. On the morning of the 7th day, the critical sweat supervened which effectually resolved the febrile paroxysm. He left the hospital after having been an inmate for a week, and although he had no return of the fever whilst in the institution, it is highly probable that he would have a relapse after dismission, which was frequently the case when the patients were discharged early.

Such is the account which it has been endeavoured to give of the Scotch Epidemic Fever of 1843-44, and I humbly think that the impartial reader must needs arrive at the conclusions which have been maintained in the foregoing pages—viz. that the leading and characteristic features of the distemper were peculiar and unexampled. Those, perhaps, whose experience has been more ample may find some points of objection; in the main, however, by rigidly adhering to facts, as noticed by constant personal observation, I trust that the views taken will not be deemed altogether incorrect. I must apologise to the readers of this journal, for having been more diffuse than might be desirable, but when it is considered what diversities of opinions there are, relating to many subjects

connected with the disease, and how many considerations there are demanding some degree of attention, to be intelligibly concise is more difficult than may be generally imagined. If the deductions which have been advanced do not coincide with the opinions of all, the data which were carefully amassed from many hundreds of cases cannot fail to be of value whatever theories are espoused or doctrines maintained, and thus in conclusion may be cited the words of Rousseau, adopted by Dr. Cormack as the motto to his work on the fever—"I know that the truth is in the facts, and not in the mind which observes them."

THE END.

WILSON and OGILVY, 57, Skinner Street, Snowhill, London.